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Rhodora

JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 36. September, 1934. No. 429.

BOTANICAL NOTES

Ivar Tidestrom

Aconitum lutescens A. Nels., Bot. Gaz. **42**: 51. 1906. When the Flora of Utah and Nevada was in preparation, this species presented some difficulties. First of all, there was scarcely any material in our herbaria to support the validity of the species; secondly, the material at hand resembled too much that of *Aconitum columbianum* Nutt. Yet the writer included it in the flora as a full fledged species, hoping later to be able to clear the status of the "species." During the last three years the active field workers of the Forest Service have forwarded to Washington for determination a number of specimens which would naturally be referred to *Aconitum lutescens* except for other characters interfering. Our two most common species in the Rocky Mountain region are: *A. columbianum* and *A. bakeri*. These two species differ principally as follows:

Front line of hood nearly straight, the beak more or less prominent	*A. columbianum.*
Front line of hood curved, the beak nearly horizontal	*A. bakeri.*

The material forwarded by the Forest Service falls into these categories. That is, the material of *A. lutescens* with a straight beak agrees in all particulars with *A. columbianum* except as to the color of the flowers. A like condition exists in respect to *A. bakeri*. The writer is therefore inclined to place the material with ochroleucrous flowers in these two groups respectively. Let us see how the species in the sister genera, *Delphinium* and *Aquilegia* behave with respect to variations in the color of their flowers.

The writer has been acquainted with Aquilegia vulgaris L. since early boyhood. In 1894, he observed this species in the pastures of his home region. Within seeing distance he observed specimens with blue, pink or white flowers. This variation in color in species of *Aquilegia* had been observed by botanical writers long before the time of Linnaeus. Both Carl Hartman and Professor Lindman, not mentioning a host of others, maintain this view. Hartman does not evidently consider the variation in color of this species as any departure from the accepted concept of the species. On the other hand, he states: "*Var. med hårig stjelk*" which, translated into English, means "varying with hairy stalks." In the case of *Aquilegia caerulea albiflora* A. Gray, there are other characters besides that of color which entitle this form to varietal rank.

Delphinium barbeyi Huth is a second example of variation in color only. The writer, while riding over large forest areas in the Rocky Mountain region, has observed plants with pink or white flowers amid a "veritable sea of purple-blue-flowered individuals." As much as ten acres in extent may be seen adorning the high plateau of the Wasatch Mountains in central Utah, here and there and with scarcely a handful of pink or white-flowered specimens among these on any one area. Most of the species of *Delphinium* growing in France present variations in color similar to those existing in *Delphinium barbeyi* and other larkspurs of our own country. It is evident, therefore, that botanists generally do not consider color variation in the three sister-genera as of specific importance and, unless these variations are accompanied by other and real botanical characters, they are never considered as varietal determinants by field botanists.

Lathyrus polymorphus Nutt. Gen. Pl. **2**: 97. 1818. Nuttall described this species and gave as synonyms *Lathyrus decaphyllus* Pursh and *Vicia stipulacea* of the same author. He discarded the names of Pursh as being "inexpressive and deceptive." In their "Studies in certain North America Species of Lathyrus"[1] Butters and St. John discuss the somewhat involved case of *Lathyrus polymorphus.* They also refer Pursh's species *Vicia stipulacea* to the Nuttallian name, but they insist on taking up Pursh's descriptive adjective "stipulaceus" and bring the species under the name *Lathyrus stipulaceus* (Pursh) Butters & St. John.

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[1] Rhodora **19**: 156. 1917.

In 1819, Dr. Torrey published his Catalogue of Plants,[1] wherein *Lathyrus stipulaceus* Leconte is described (p. 92). Dr. Torrey later reduced this species to a synonym of *L. myrtifolius* Muhl. (*L. palustris myrtifolius* (Muhl.) Gray).

In 1828, Dr. Torrey published "Some Accounts of a Collection of Plants made during a journey to and from the Rocky Mountains" . . . by Edwin P. James[2] wherein an account is given of two species of *Lathyrus* collected by Dr. James, U. S. A. Torrey calls one of them *Lathyrus polymorphus* Nutt., giving as synonyms *L. decaphyllus* and *Vicia stipulacea.* The other species described is given the name *Lathyrus myrtifolius* Muhl. In 1838,[3] Torrey and Gray published another Nuttallian species, *Lathyrus ornatus*, and gave as a synonym *L. polymorphus* Nutt. (including *L. decaphyllus* as a synonym). In this later publication Torrey and Gray have *Lathyrus polymorphus* Nutt. follow *L. ornatus*, while *Vicia stipulacea* Pursh appears again as a straight synonym under *L. polymorphus* Nutt. Torrey and Gray kept *L. ornatus* Nutt. and *L. polymorphus* Nutt. distinct, the former being published here for the first time. Butters and St. John, who combine the two species of Nuttall, give the following: Mr. Bayard Long, after comparing the type specimens of *Vicia stipulacea* Pursh and *Lathyrus ornatus* Nutt. in the herbarium of the Philadelphia Academy, reports to us, "I should say that they are unquestionably identical." Rydberg, in his new Flora of the Prairies and Plains of Central North America, has accepted the name *Lathyrus stipulaceus* (Pursh) Butters & St. John, citing *L. ornatus* Nutt. as a synonym, but does not mention *L. polymorphus* Nutt.

Under the Vienna Code the name *Lathyrus stipulaceus* (Pursh) Butters & St. John is valid for the plants in question. Under the American Code as well as under the International Code of 1930, a homonym of later date is inadmissable and *Vicia stipulacea* Pursh should properly be referred to *Lathyrus polymorphus* Nutt.

Range Extension of two Plant Immigrants. A great number of European plants are now adventive and established within the limits of the United States. Long before the establishment of a "pure seed policy," seeds of many of our European weeds came in with grain, in emballage and by other means, and have become fully established and listed in nearly all of our floras. Of these immigrants, Conium

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[1] Catalogue of Plants of New York.

[2] Ann. Lyc. N. Y. 2: 180. 1828.

[3] Torrey & Gray, Fl. N. Amer. 1: 277. 1838.

MACULATUM L. and DIPLOTAXIS TENUIFOLIA (L.) DC. deserve some mention. Both species have been listed in the floras of the Eastern states for many years, and both have appeared on the Pacific Coast for some time. *Conium maculatum* was recorded from California by Brewer & Watson in Botany of California (**1**: 258. 1876) as "sparingly introduced in waste places in the neighborhood of the older towns." Jepson reports it as "widely distributed" (Manual of Flowering Plants of California 706. 1925). The writer collected the species at Carson City, Nevada, in 1919 (*Tidestrom* 10,215). Since that time the species has been discovered in Colorado. Mr. L. C. Shoemaker of Forest Service collected *Conium maculatum* on the Holy Cross National Forest, November 8, 1931, at an elevation of 2,400 meters.

DIPLOTAXIS TENUIFOLIA (L.) DC. is another species with a history of migration similar to that of *Conium maculatum*. Long established in eastern North America from Canada to Alabama, it has also been recorded from Pasadena and Santa Ana, California. On April 25, 1930, Forest Ranger A. M. Cusick collected the species (U. S. For. Serv. 65,457) on Lemhi National Forest, Custer County, Idaho, at an elevation of 1,500 meters. The illustration of the species given by Bonnier (Flore de France, Suisse et Belgique **1**: *pl. 32. f. 139*) applies well to the Idaho specimen. Generally *D. tenuifolia* is glabrous, but occasionally specimens with simple or branched hairs have been observed, as in the case of *D. muralis*. Our California specimens are glabrous. Some of the specimens from the Eastern States are sparingly hirsute as in the Idaho specimen. The variation in the species as to pubescence was noted by Bonnier, who describes the leaves as "*un peu glauque, sans poils ou presque sans poils.*"

LANGLOIS HERBARIUM,
CATHOLIC UNIVERSITY OF AMERICA,
Washington, D. C.

POTOMOGETON PANORMITANUS IN THE SUDBURY RIVER.—Collecting *Potamogeton* is a diversion from which the average amateur botanist at last may derive some intellectual satisfaction. Thanks to Professor Fernald's extraordinarily lucid monograph on the linear-leaved North American species,[1] there is now a good sporting chance of making satisfactory determinations. Moreover, there is a certain element of suspense, well maintained from the moment the slimy strings are picked off the rake to the final curtain when the specimens are gleefully submitted to High Authority for verification. The chances of turning up something worth while are always excellent.

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[1] Fernald: The Linear-leaved North American Species of Potamogeton, Section Axillares: Mem. Am. Acad. Arts & Sci. XVII, Part I, July 1932.

For example, the authors of this note spent a brief twilight hour on the Sudbury River at Wayland, Massachusetts, last summer (August 8, 1933) and in due course discovered themselves to be the proud collectors of authentic *P. panormitanus* Biv., var. *major* G. Fischer in young fruit. With the exception of Nantucket and Marthas Vineyard, this species apparently has not been reported as occurring in southern New England east of the Berkshires. According to Fernald it shows a very striking preference for basic or slightly alkaline (or brackish) waters. Consequently it seems somewhat out of place in a sluggish river noted for its peaty meadows. A specimen has been filed at the Herbarium of the New England Botanical Club.—RICHARD J. EATON AND LUDLOW GRISCOM.

A GRASS NEW TO MISSOURI.—During the month of September, 1933, while in Forest Park in the city of St. Louis, the writer noticed a strange-looking grass growing about the margins of the northeast portion of the Lagoon at the base of "Art Hill." Superficially, the ovate-lanceolate leaves with strongly clasping bases, papillose-hispid nodes and sheaths, and ciliate margins towards the base of the blades suggested an abnormal-appearing *Panicum clandestinum,* but the long slender awns protruding from each of the spikelets and the habit of creeping at the nodes added puzzlement to the situation. The grass was determined at the U. S. National Herbarium, and found to be *Arthraxon hispidus* (Thunb.) Merr. var. *cryptatherus* (Hack.) Honda, a species of the tribe *Andropogoneae,* but, according to Mrs. Agnes Chase, "an exception of all the keys except Professor Hitchcock's, and his is not yet published." It is a native of China, Japan, and Korea, and is a recent introduction in the United States, having been collected in this country previously from half a dozen states. Although it has been collected from Arkansas, this is its first record from Missouri.—JULIAN A. STEYERMARK, Missouri Botanical Garden, St. Louis, Mo.

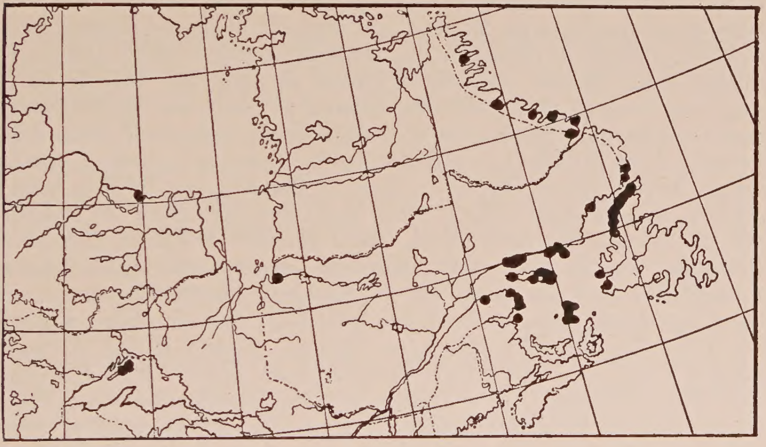
DRABA IN TEMPERATE NORTHEASTERN AMERICA

M. L. Fernald

(*Continued from page 305*)

10. D. incana L. *Biennial* (rarely slightly perennial by the brief persistence of basal offshoots), with a simple or more or less multicipital ascending to decumbent caudex: *lower leaves* of the rosettes *shriveling soon after anthesis, the rosette-leaves not strongly contrasting with the lower cauline; the subspherical rosettes of the* 1*st year loosening and elongating to form the usually leafy* (up to 50, rarely to 95 leaves) *flowering stem: rosette-leaves* lanceolate or oblanceolate, 0.5–3 cm. long, 2–5 mm. broad, mostly *ciliate with long simple or bifurcate trichomes* and glabrous to hirtellous on the surfaces; *cauline leaves* few to very many, the lower narrow, the upper gradually broader and oblong to ovate, usually remotely dentate, *hirsute* with variously mixed simple, bifurcate and stellate trichomes: *flowering stem* 0.15–5 dm. high, simple to much branched, *usually densely leafy, pilose-hirsute to tomentulose or villous, especially above, and on the axis of the raceme with long* simple and variously forked *and implicated trichomes:* raceme at first dense, elongating in fruit, becoming 1–15 cm. long, few–100 (or more)-flowered; *the lower* 1–6 *flowers of the primary raceme usually leafy-bracted: pedicels densely pilose to villous,* the lowest becoming 1–5 mm. long: sepals oblong to elliptic, 1.5–2.5 mm. long, pilose on the back, white-margined: petals white, narrowly cuneate-obovate, emarginate or obtuse, 2.5–5 mm. long: anthers 0.3–0.5 mm. long: pistil glabrous, with 16–40 ovules and with a very short style: *siliques oblong or elliptical to lanceolate,* 4–14 mm. long, 1.5–3 mm. broad; *style obsolete or thick and up to* 0.3 *mm. long:* seeds 0.7–1 mm. long.—Sp. Pl. ii. 643 (1753); Torr. & Gray, Fl. N. Am. i. 107 (1838), in part; Hook. Fl. Bor.-Am. i. 54 (1830); Fern. & Knowlt. Rhodora, vii. 63, t. 60, figs. 1 and 2 (1905); Elis. Ekm. Kungl. Svenska Vet.-Akad. Handl. ser. 3, ii. no. 7: 36 (1926); O. E. Schulz in Engler, Pflanzenr. iv^{105}. 282 (1927). *D. contorta* Ehrh. Beitr. vii. 155 (1792); DC. Syst. ii. 348 (1821) and Prodr. i. 170 (1824). *D. incana*, β. *contorta* (Ehrh.) Liljebl. Nov. Act. Reg. Soc. Sci. Ups. vi. 57 (1799).—Greenland; Labrador, Newfoundland and Saguenay and Gaspé Cos., Quebec; shores of James Bay; islands of Lake Superior, Michigan; boreal Eurasia. The following are characteristic. Labrador: Titterasuk, *C. S. Sewell,* no. 40; Nain, *Sewall,* no. 79; shore, Rigoulette, *Sornborger,* no. 70, *Bowdoin College Exped.* 1891, no. 269, *R. H. Wetmore,* no. 102,959; wet rocky hillsides, Indian Harbor, *Harlow Bishop,* no. 327. Newfoundland: gravelly limestone shore, Cape Norman, *Wiegand, Griscom & Hotchkiss,* no. 28,348; calcareous rocks and talus, entrance to Port Saunders Harbor, *Fernald, Wiegand & Kittredge,* no. 3452; headlands of Cape St. George, *Mackenzie & Griscom,* no. 11,089^{a}. Quebec: grassy gully, Île Kécarpoui, Archipel

de Kécarpoui, Saguenay Co., *St. John*, no. 90,477; Anticosti, June 23, 1861, *Hyatt, Shaler & Verrill;* sur le talus du rivage, Pointe de l'Est, Anticosti, *Victorin & Rolland*, no. 21,032; aux alentours au phare sur le cailloutis calcaire, Pointe de l'Est, Anticosti, *Victorin, Rolland & Louis-Marie*, no. 21,479; sur les graviers calcaires, Baie du Renard, Anticosti, *Victorin, Rolland & Louis-Marie*, no. 21,467; gravier du barachois, R. au Saumon, Anticosti, *Victorin et al.*, nos. 21,468, 21,473; sur les graviers du barachois, R. Dauphine, Anticosti, *Victorin & Rolland*, no. 27,310; graviers, Lac à la Croix, Anticosti, *Victorin & Rolland*, no. 27,311; bord de la lagune, Lac Salé, Anticosti, *Victorin & Rolland*, nos. 24,864, 27,192; Baie Ste.-Claire, Anticosti, *Victorin*, no. 4139; sur les cailloutis calcaire du sommet, Cap Gaspé, *Victorin, Rolland, Brunel & Rousseau*, no. 17,381; turfy crest of sea-cliffs, Cape Gaspé, *Pease*, no. 20,219; Anse-a-l'Indien, près du Cap Gaspé, *Victorin et al.*, no. 17,384; conglomerate (calcareous) sea-cliffs, Bonaventure Island, *Fernald & Collins*, no. 1082, *Victorin et al.*, no. 17,386; crests of calcareous sea-cliffs, Cap Blanc, Percé, August 17, 1904, *Collins, Fernald & Pease;* July 26, 1905, *Collins & Fernald*, no. 88; schistes, Chloridorme, *Rousseau*, nos. 31,214, 31,222; turfy roadside bank, Cap Chat, *Fernald & Pease*, no. 25,089. MAGDALEN ISLANDS: dry crevices or talus of East Cape, Coffin Island, *Fernald, Long & St. John*, no. 7505, in part (mixed with var. *confusa*). ONTARIO: Fort Severn, Hudson Bay, August 8, 1887, *J. M. Macoun*. MICHIGAN: Gull Islands, Lake Superior, *W. S. Cooper*, no. 112 (as *D. arabisans*, var. *orthocarpa*); rock crevices, Passage Island, near Isle Royale, *Povah, Brown & McFarlin*, no. 3671B (Univ. Mich.). MAP 10 (including vars.).



MAP 10. American Range of DRABA INCANA.

Var. CONFUSA (Ehrh.) Liljebl. *Siliques pubescent.*—Nov. Act. Soc.

Sci. Ups. vi. 57 (1799); Poir. Encycl. Suppl. ii. 524 (1811); Fern. & Knowlt. RHODORA, vii. 64 (1905): O. E. Schulz, l. c. 285 (1927). *D. confusa* Ehrh. Beitr. vii. 155 (1792); DC. Syst. ii. 348 (1821) and Prodr. i. 170 (1824), mostly. *D. incana* β. *hebecarpa* Lindbl. Linnaea, xiii. 331 (1839). *D. incana*, subsp. *confusa* (Ehrh.) Elis. Ekm. l. c. 36 (1926).—Greenland and Labrador to Newfoundland, Magdalen Islands, northeastern New Brunswick and James Bay, generally more common than the glabrous-fruited plant. LABRADOR: Okkak, *Moravian Bros.;* Nain, *C. S. Sewall*, no. 77, in part; Hopedale, *Sewall*, no. 169; edge of "The Park," Hopedale, *Abbe, Hogg & Forbes*, no. 370; on a roof, Fox Harbor, *J. A. Allen*, no. 76; West Point at mouth of Red Bay, September 6, 1923, *A. G. Huntsman*. NEWFOUNDLAND: turfy limestone barrens, Burnt Cape, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*, no. 28,350; springy swales and turfy shores, Boat Harbor, *Fernald, Wiegand & Long*, no. 28,351; turfy slope near mouth of Big Brook, *Fernald & Long*, no. 28,349; turfy limestone barrens, Sandy (or Poverty) Cove, Straits of Belle Isle, *Fernald, Long & Gilbert*, no. 28,352; turfy limestone barrens, Capstan Point, Flower Cove, *Fernald, Long & Dunbar*, no. 26,715; peaty pockets in limestone ledges, Brig Bay, *Fernald, Long & Dunbar*, nos. 26,706–26,708; turfy shore, Bard Harbor, *Wiegand, Gilbert & Hotchkiss*, no. 28,353; turfy limestone barrens, St. John Island, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 28,354; turf overlying limestone, Grassy Island, St. John Bay, *Fernald, Long & Fogg*, no. 1729; dry gravelly limestone barrens, Pointe Riche, *Fernald, Long & Fogg*, no. 1730; turfy limestone shore, Sandy Cove, Ingornachoix Bay, *Fernald, Long & Dunbar*, no. 26,709; calcareous rocks and talus, entrance to Port Saunders Harbor, *Fernald, Wiegand & Kittredge*, no. 3454; turfy crests of calcareous cliffs and ledges, Cow Head, *Fernald & Wiegand*, no. 3453; abundant on roof of shanty, mouth of Barachois Brook (near Robinson Head, Bay St. George), *R. B. Kennedy*, nos. 1–3. QUEBEC: grassy shore, Îles Boisées de Cap Blanc, Washtawouka, Goynish, *St. John*, no. 90,481; grassy places, Archipel de Kécarpoui, *St. John*, nos. 90,478–90,480; turfy ledges, Île Triple, Archipel Washicouti, *St. John*, no. 90,482; sur un îlôt de gneiss laurentien, Îlets de la Baie à Jean, *Victorin & Rolland*, no. 18,249; sur le gneiss laurentien, Îlôts à Charles, Natashquan, *Victorin & Rolland*, no. 18,250; vielle prairie au bord de la mer, Pointe-aux-Esquimaux, *Victorin & Rolland*, no. 18,247; sur le cailloutis calcaires au bord de la mer, Île à la Vache Marine, Mingan, *Victorin & Rolland*, no. 18,248; sur le gravier calcaire, Île Ste.-Géneviève, Mingan, *Victorin & Rolland*, nos. 21,465, 21,475; shore of Salt Lake, Anticosti, *J. Macoun*, no. 19; limestone detritus, crest of Cap Barré, Percé, August 16, 1904, *Collins, Fernald & Pease*, July 23, 1905, *Collins & Fernald*, no. 89, August 1, 1907, *Fernald & Collins*, no. 1080; calcareous sea-cliffs, Bonaventure Island, *Fernald & Collins*, no. 1081; clay soil, river-bank, Rupert House, James Bay, *David Potter*, no. 548. MAG-

DALEN ISLANDS: dry sandy summit of Great Bird Rock, *St. John*, no. 1893; dry sandy headland, Brion Island, *St. John*, no. 1890; dry crevices or talus of East Cape, Coffin Island, *Fernald, Long & St. John*, no. 7505, in part; sur le sommet du Cap-de-l'Est, *Victorin & Rolland*, no. 9485; Entry Island, June 23, 1861, *Hyatt, Verrill & Shaler;* Pointe-aux-Vaches-Marines, Île de la Grand-Entrée, *Victorin & Rolland*, no. 9486; turfy crests of headlands and dry gravelly beach, Grindstone, *Fernald, Bartram, Long & St. John*, nos. 7503, 7504; sur les alluvions près de l'eglise, Île du Havre-aux-Maisons, *Victorin & Rolland*, no. 9584; Amherst, *Frits Johansen*, no. 93,671. NEW BRUNSWICK: grass plain, Grande Plaine, Miscou Island, *S. F. Blake*, no. 5590. PLATE 299.

Draba incana, in the regions where it abounds, is often weed-like, taking possession or recently exposed gravels, humus of rotting roofs, litter from the sea and the fisheries and other quite modern habitats. It is equally at home on the driest of gravels, ledges and sands and in the manure pile. *D. incana*, consequently, behaves in western Newfoundland and eastern Quebec just as it does in Greenland: "**Draba incana** L., the commonest species in the southern section [of western Greenland], is nitrophilous and often found on manured spots."[1] In such spots, of course, it is what O. E. Schulz calls "var." *luxurians* or "var." *robusta*. *D. incana*, therefore, as a quick-growing species, usually a biennial or winter-annual, varies extremely in size and habit. On the most xerophytic spots it may come to complete maturity with a stature of only 1.5–2 cm;[2] in rich humus, decaying litter or fertilized spots it may be 3–5 dm. high, either simple or freely branched, and with the almost innumerable leaves (the many leaves of the large 1st-year rosettes carried up by elongation of the axis) crowded or loosely imbricated. In single colonies individuals from a single sowing of seeds may be quite simple or may form loosely to densely cespitose mats with multicipital caudices, obviously dependent on food-supply and moisture; and single individuals of the latter habit may have either very densely leafy flowering stems (derived from vigorous primary rosettes) or almost leafless ones (derived from weaker secondary offshoots) springing from the identical base.

In some individuals in arid habitats the subspherical cabbage-like rosettes of the 1st year, deprived of moisture, scarcely lengthen to flower and fruit, producing low conical fruiting plants with closely crowded leaves and capitate racemes. Upon selected individuals

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[1] Porsild, Meddel. om Grønl. xcii. No. 1: 30 (1932).

[2] Fernald, RHODORA, xxxv. 127, t. 239, fig. 5 (1933).

(FIG. 2) such as these (from Cap Barré, Percé) is based var. *conica* O. E. Schulz, l. c. 285 (1926); but other individuals (FIG. 5) from the same spot, especially those collected in a succeeding and wet, instead of dry, summer, with stems up to 3 dm. high, with leaves 1–2 cm. apart and with racemes elongate to 8 cm. or more (the tips still in anthesis), clearly demonstrate that var. *conica* is of absolutely no taxonomic value and would better have been suppressed.

Similarly, the other "varieties" and "subspecies," based merely on height, degree of branching, leafiness and other every-day responses to poverty or to richness of soil, seem too artificial for serious consideration; it would be as illogical to treat as varieties and subspecies the short or tall, simple or branched, small-leaved or large-leaved individuals of *Chenopodium album* or any other annual or biennial weed of neglected fields and disturbed soils. The minor edaphic responses of this nature proposed in *Draba incana* include the following (and several others, not accredited to North America), which make a most unnecessary and unwelcome load which must be carried along eternally in synonymy.

Var. *nana* Lindbl. Linnaea, xiii. 332 (1839); O. E. Schulz, l. c. 284 (1927). "Planta pusilla. Caules 1, 5–10 cm longi, simplices vel ramosi, paucifolii, rarissime aphylli." [FIG. 4 and 2 stems of FIG. 1].

Var. *stricta* Hartm. Handb. Skand. Fl. ed. 2: 178 (1832); O. E. Schulz, l. c. 285 (1927). "Caulis strictus, simplex vel apice tantum ramosus, foliis numerosis (usque ad 50 vel etiam ad 95 . . .) valde approximatis imbricatis apicem versus sensim minoribus (igitur planta in adspectu conica!) obsessus. Flores paulo minores." [FIG. 6].

Var. *conica* "O. E. Schulz (n. var.)—*D. incana* Fernald et Knowlton! in Rhodora VII. 76. (1905) 63, t. 60, Fig. 1 et 2, non L.—Habitu varietatis *strictae*, sed humilior, 2–14 cm. alta. Racemus fructifer ± capitato-confertus. Siliculae minutae, 5–8 mm longae [in typical *D. incana* "6–12 mm longae"], pedicellis 3–1 mm longis [in typical *D. incana* "4–2 mm longis"] insidentes." [Selected starved individuals (FIG. 2) from Cap Barré, above discussed. Other individuals (FIG. 5) from the same lot of seed are "var. *stricta*." All of them, however, having copiously stellate-pilose siliques, are the earlier-published var. *confusa* (Ehrh.) Liljebl. (1799).]

Var. *luxurians* Aug. Berlin, Öfvers. Kgl. Vet.-Akad. Förhandl. Stockh. (1884), no. 7: 25 (1884); O. E. Schulz, l. c. 285 (1927). "Planta elata, 35 cm alta, viridula. Caulis densifolius, superne ramosus. Racemus terminalis basi bracteatus [typical *incana* "0,10–0,35 m alta . . . plerumque foliis multis (usque ad 55!) dense foliosi, . . . Racemus . . . floribus imis (1–6) saepe in axillis foliorum supremorum"]. Siliculae infimae pedicellis elongatis usque ad 4 cm. longis flexuosis insidentes (quasi corymbi racemorum lateralium ad siliculam unicam reducti!)" [Aberrant individuals such as are likely to occur in almost any species!]

Var. *robusta* "O. E. Schulz (n. var.)— . . . *Draba incana* Smith and Sowerby, Engl. Bot. VI. (1797) t. 388, non L. Planta robusta, usque ad 50 cm alta, viridula. Folia caulina numerosa, obovato-cuneata, acuta, utrinque dentibus acutissimis inaequalibus utrinque 2–5 inciso-dentata, inferiora 3,5 cm longa [typical *D. incana* with "Folia basalia . . . 1–2,5 cm longa; folia caulina . . . oblongo-ovata, acutiuscula, utrinque dentibus manifestis 1–3-dentata"].

An besonders fetten Stellen und in Kultur."

The statement of habitat shows that Schulz's last variety is merely luxuriant plants of cultivation or of unusually rich soil. Smith, whose plant of the English Botany is cited, had sufficient understanding not to call his plant different, simply because it was in the garden: "The root is biennial, flowering early in the second summer. The specimen here represented was sent from Scotland young, . . . and being planted in a garden, flowered more luxuriantly than is usual on rocks or walls; but the plant often grows in rich moist spots even on its native mountains. The specimen in Flora Danica is a starved one."[1]

The publication or the maintaining of such individual responses as true varieties in this day and generation (more pardonable a century ago), when a systematist, in order to qualify as competent, should be required to show at least elementary understanding of the simplest and most common edaphic responses of plants, is not worthy taxonomy; it is merely a mechanically artificial imitation of it. When one witnesses such matter put out as ostensibly serious and scholarly publication on page after page of elaborate books, he cannot help regretting that the obligation to maintain in our greater botanical libraries complete series of taxonomic works has made it necessary to pay for this single 396-page part of a volume $11.75 (gold), precious money which ought to have been available for a higher type of science. Such cases, as we say in America, "hit the pocket-nerve"; and they make one seriously doubt the economic wisdom of the priority-principle in nomenclature, the principle which, unfortunately, has established a paying market for any so-called taxonomic publications which, regardless of how padded they may actually be, can display an occasional "n. sp.," "n. var." or "n. comb." in their pages. The "new deal," the world over, calls for scrupulous inspection and editing before publication.

11. D. **Sornborgeri**, sp. nov. (TAB. 300, FIGS. 1–3), planta perennans denique pluricaulis fructifera 1.5–2.5 dm. alta; caudiculorum

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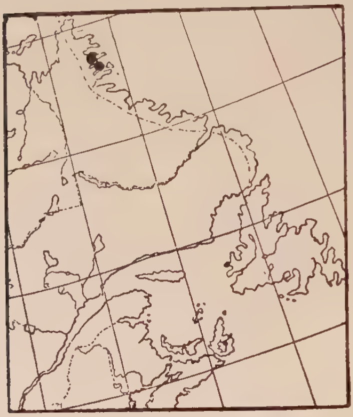
[1] Smith, Engl. Bot. vi. t. 388 (1797).

ramis lucidis albescentibus foliis emortuis persistentibus tectis; caulibus simplicibus vel imo ramosis glaberrimis lucidis; foliis caulinis rhomboideo-lanceolatis vel oblongo-oblanceolatis membranaceis glaberrimis 1–2.3 cm. longis integris vel sparse dentatis pilis simplicibus vel furcatis remote ciliatis; racemis floriferis corymbiformibus fructiferis elongatis (rhachi 2–12 cm. longo) 2–24-floris; pedicellis 4–10 mm. longis glabris erecto-patentibus; sepalis oblongis obtusis sparse pilosis 2.5–3 mm. longis 1.2–1.7 mm. latis; petalis lacteis obovatis emarginatis valde unguiculatis 3.5–4 mm. longis 2–2.5 mm. latis; antheris 0.3 mm. longis; ovariis glabris 28–40-ovulatis; siliculis glabris oblongis subacutis 6–10 mm. longis 2–2.5 mm. latis stylo brevissimo (0.1–0.2 mm. longo) coronatis, valvis reticulato-nervosis; seminibus a funiculis 0.3–0.5 mm. longis pendulis ovoideis 0.8 mm. longis.—LABRADOR: slope of moist slaty detritus immediately below a field of snow, at about 500 m. alt., Ramah, August 20–24, 1897, *J. D. Sornberger*, nos. 61 (TYPE in Gray Herb.), 175 in part; originally distributed as *D. stenoloba* Ledeb. MAP 11.



MAP 11. Range of DRABA SORNBORGERI.

Draba Sornbergeri, erroneously reported as *D. stenoloba* by Fernald & Sornberger, Ott. Nat. xiii. 100 (1899), is unique among our leafy perennial species in its almost wholly glabrous character. From *D. stenoloba* it differs at once in its leafy and usually more branching stems, *D. stenoloba* having them simple and naked or with 1–3 remote leaves; by its glabrous character, the leaves and at least the bases of the stems in *D. stenoloba* being obviously hispid with simple and forking hairs; by the shorter racemes (the longest barely half the height of the plant) with shorter ascending pedicels and shorter and broader siliques, the northwestern *D. stenoloba* having the mature racemes one-half to two-thirds the entire height of the plant, the divergent to reflexed fruiting pedicels 7–15 mm. long and the linear siliques 1.2–2 cm. long.

Schulz treats *Draba Sornborgeri* as *D. crassifolia*, var. *Parryi* (Rydb.) O. E. Schulz, the latter based nomenclaturally on *D. Parryi* Rydb. Bull. Torr. Bot. Cl. xxix. 241 (1902); but in describing the variety Schulz was more influenced by the plant of Labrador than by true *D. Parryi* (PLATE 300, FIGS. 4 and 5) of Colorado and Wyoming. *D. Parryi* or *D. crassifolia*, var. *Parryi*, briefly considered in this paper under *D. crassifolia*, is an extreme of *D. crassifolia* with linear-oblanceolate, acute rosette-leaves and nakes scapes, the fully mature plants rarely up to 1.6 dm. high and with racemes up to 25-flowered. Rydberg's original description of it was clear:

> Annual, perfectly glabrous, except a few cilia on the petioles: stems several, usually less than 1 dm. high, scapiform or rarely with a stem leaf: basal leaves numerous, linear or narrowly linear-oblanceolate, 1.5–2.5 cm. long; pedicels spreading, in fruit 5–8 mm. long: flowers small; petals scarcely 2 mm. long, white or light yellow: pods erect, oblong, 5–8 mm. long, 1.5–2 mm. wide, glabrous: style obsolete.

Flowering and fruiting plants from the type-locality (Gray's Peak, Colorado) of *Draba crassifolia*, var. *Parryi* (*Patterson*, no. 6) are shown in PLATE 300, FIGS. 4 and 5. How different are they from the characterization of Schulz of var. *Parryi:*

> Planta altior et ramosior, fructifera usqe ad 20 cm longa. Caules interdum 3–4-phylli. Etc.

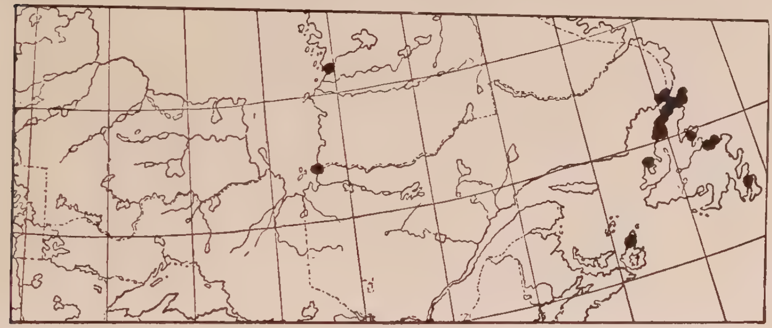
a characterization based not on *D. Parryi* but on *D. Sornborgeri!*

From *Draba crassifolia* (PLATE 294), which, of course, *D. Sornborgeri* suggests in its glabrous character, it is at once separated by its tall and usually branching and leafy stems; its broader leaves; its larger flowers, with sepals 2.5–3 mm. long (in *D. crassifolia* 1.5–2.3 mm. long); its petals 3.5–4 mm. long and 2–2.5 mm. wide (in *D. crassifolia* 2–3 mm. long, 0.7–1.2 mm. wide) and its more numerous (28–40) ovules and seeds (in *D. crassifolia* 16–20).

Although I have seen *Draba Sornborgeri* only from the slopes near Ramah, it is probably of more general occurrence in northern Labrador and is presumably on Baffin Island. This extention of range is suggested by Schulz's citation under *D. crassifolia*, var. *Parryi:* "Labrador: Cumberland Inlet (comm. W. Hans [Cumberland Inlet or Cumberland Sound is in Baffin Island], Ramah (J. D. Sornborger 1897, n. 61—20–24 August fruchtend, besonders luxuriös mit beblätterten Ästen, als *D. stenoloba*), Hebron (Wenck 1851)."

12. D. NORVEGICA Gunner. *Cespitose* perennial, forming mats 0.3–1.5(–2) dm. broad, with slightly to freely branching caudex: *rosettes* few to very numerous, 1.5–3 cm. across; *their leaves* narrowly oblanceolate, oblong-lanceolate or narrowly obovate, 2–6 mm. broad, subacute or obtuse, entire or with 1–3 teeth on each margin, *hispid with numerous simple, bifurcate and stellate trichomes:* mature fruiting *stems* 0.1–2 dm. high, simple or forking, *hirsute especially below*, with

divergent simple and variously forked trichomes, with 1 (rarely 0)–5 *ovate hispid leaves* 3–10 *mm. broad,* with margins entire or 1–3-dentate: *racemes* in anthesis with the lower flowers often remote; *the primary ones in fruit* elongated to $^1/_3$–$^6/_7$ *the full height of the plant,* 5–25-flowered; *pedicels* short, often stellate-hirtellous, *the lowest in maturity* 1–5 *mm. long: sepals* oblong, obtuse, 1.8–2.6 *mm. long,* 1–1.5 *mm. broad: petals* white, 3–4.2 mm. long, 2–3 *mm. broad:* ovaries glabrous, with 14–28 ovules and very short style: *siliques oblong or oblong-lanceolate,* 5–9 mm. long, 2–3.8 *mm. broad,* acutish to obtuse, *with style* 0.2–0.5 *mm. long;* the *valves veiny* and glabrous or promptly glabrate: seeds 0.9–1.2 mm. long.—Fl. Norveg. ii. 106 (1772); O. E. Schulz in Engler, Pflanzenr. iv^{105}. 220 (1927). "An? *D.* pyrenaica" Oeder, Fl. Dan. i. fasc. iii. 6, t. cxliii. (1764), not L. (1753). *D. hirta,* var. *norvegica* (Gunner) Liljebl. Nov. Act. Reg. Soc. Sci. Ups. (1799) 56; DC. Syst. ii. 343 (1821) and Prodr. i. 169 (1824). *D. hirta,* β. *alpicola* Wahlenb. Fl. Lapp. 175, t. xi. fig. 1 (1812). *D. scandinavica* α. *legitima* Lindbl. Linnaea, xiii. 322 (1839). *D. laxa,* α. *legitima* Lindbl. l. c. 326 (1839). *D. rupestris,* β. *stricta* a. *lejocarpa* Lindbl. Bot. Notis. (1841) 221. *D. rupestris* Liebm. Fl. Dan. xiv. fasc. xli. 7, t. mmccccxxi. (1845) and many subsequent authors, not R. Br. (1812). *D. hirta,* δ. *incisa* Lange, Meddel. Grønl. iii^1. 43 (1880) and Fl. Dan. xvii. fasc. li. 9, t. mmmxxxiii. (1883). (For further citations see Schulz).—Northern Europe; Newfoundland, Cape Breton, Nova Scotia, southeastern Quebec and shores of Hudson Bay, Ungava and Quebec. NEWFOUNDLAND: St. Anthony Harbor, September 10, 1923, *A. G. Huntsman;* near seaward edge of Fishing Head, St. Anthony, *Abbe & Brooks,* nos. 366, 368; exposed rocks, crests of Castle Rock, Tilt Cove, *Fernald, Wiegand & Darlington,* no. 5460; turfy and rocky crests, Twillingate, *Fernald, Wiegand & Bartram,* no. 5459; cliffs, Exploits, Notre Dame Bay, *Waghorne,* no. 27; Red Rocks, Brigus, July 31, 1931, *A. M. Ayre;* damp pocket, rocky crests, Cape Dégrat, Quirpon Island, *Fernald & Long,* no. 28,402; dry slaty crests of hills, Little Quirpon, *Fernald & Long,* no. 28,401; crevices of trap cliffs, Sacred Island, *Fernald & Long,* no. 28,404; dry trap cliffs south of Ship Cove, Sacred Bay, *Fernald, Wiegand & Long,* no. 28,406 (mixed with *D. glabella*); crevices of trap cliffs, Anse aux Sauvages, Pistolet Bay, *Fernald, Wiegand & Long,* no. 28,405; shelves, crests and talus of diorite cliffs, Ha-Ha Point, *Fernald & Long,* no. 28,396; shelves, crests and talus of diorite cliffs, Ha-Ha Mountain, *Fernald & Long,* no. 28,400 in part; trap ledges, Piton Point, Ha-Ha Bay, *Wiegand, Gilbert & Hotchkiss,* no. 28,395; limestone ledges and barrens, Burnt Cape, Pistolet Bay, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss,* nos. 28,382, 28,384, 28,386, 28,388; limestone ledges, Schooner (or Brandy) Island, Pistolet Bay, *Pease & Long,* no. 28,390; dry limestone rock-barrens, Boat Harbor, Straits of Belle Isle, *Fernald, Wiegand & Long,* no. 28,391; turfy seashore east of Big Brook, Straits of Belle Isle, *Pease & Griscom,* no. 28,377; dry limestone ledges, Sandy (or Poverty) Cove, Straits of Belle Isle, *Fernald, Long & Dunbar*, no. 26,703; dry gravelly limestone barren, Savage Point, *Fernald, Wiegand, Pease, Long, Gilbert & Hotchkiss*, no. 28,374; turfy and shingly limestone shore, Capstan Point, Flower Cove and peaty pockets in limestone ledges, Nameless Point, Flower Cove, *Fernald, Long & Dunbar*, nos. 26,710, 26,711; turfy limestone shores and headlands, Flower Cove, *Fernald, Griscom & Gilbert*, no. 28,372, *Pease, Long & Gilbert*, no. 28,373; turfy limestone barrens, Deadman Cove, Straits of Belle Isle, *Wiegand, Gilbert & Hotchkiss*, no. 28,376; limestone barrens near Ice Point, St. Barbe Bay, *Wiegand, Gilbert & Hotchkiss*, no. 28,375; peaty or turfy pockets in limestone barrens, Brig Bay, *Fernald, Long & Dunbar*, no. 26,704; crests of dry limestone, Dog Peninsula, St. Margaret Bay, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 28,411; limestone cliffs and ledges on western face of Bard Harbor Hill, *Wiegand, Gilbert & Hotchkiss*, no. 28,389; exsiccated spots in quartzite barren near summit, Bard Harbor Hill, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 28,392; wet escarpments on calcareous sandstone, western face, Bard Harbor Hill, *Fernald & Long*, nos. 28,409, 28,410; dry limestone cliffs and talus, western face, Doctor Hill, *Fernald & Long*, no. 28,408; dry gravelly limestone barrens, St. John Island, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 28,393; shaded shelves of limestone cliff, Crow's Head, St. John Bay, *Fernald, Long & Fogg*, no. 1743; turfy and gravelly upper border of limestone sea-beach, Eastern Point, St. John Bay, *Fernald, Long & Fogg*, no. 1745; turfy borders of limestone beach, Gargamelle Cove, *Fernald, Long & Fogg*, no. 1741; shaly sea cliff, north side, Keppel Island, *Abbe & Pease*, no. 363; turfy crevices and talus of trap sea-cliffs, French (or Tweed) Island, Bay of Islands, *Fernald, Long & Fogg*, no. 281. QUEBEC: calcareous cliffs, Blanc Sablon ("Labrador"), *Fernald, Wiegand & Long*, no. 28,413 (as *D. arabisans*); bare hillside about 3 miles north of Long Point, Brest, *E. C. Abbe*, no. 1262, as *D. megasperma*. UNGAVA: Richmond Gulf,

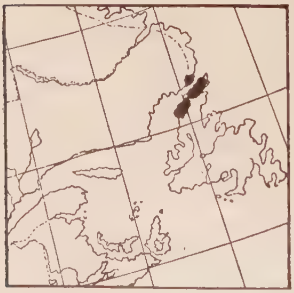


MAP 12. American Range of DRABA NORVEGICA.

A. P. Low, no. 63,140; stony beach, 10 miles south of East Main, James Bay, *David Potter*, no. 549. Nova Scotia: crevices of rocks, Big Intervale, Margaree, Cape Breton Island, *J. Macoun*, no. 18,987. All the preceding nos., unless otherwise noted, were distributed as *D. hirta* or as *D. rupestris*. Plate 301; map 12.

Var. hebecarpa (Lindbl.) O. E. Schulz. Flowering stems hispid to the summit: siliques permanently hispid with simple, bifurcate and sometimes stelliform trichomes.—O. E. Schulz in Engler, Pflanzenr. iv^{105}. 222 (1927). *D. trichella* Fries, Novit. Fl. Suec. Mant. Alt. 40 (1839) and Summa Veg. Scand. i. 149 (1846) acc. to Schulz. *D. scandinavica*, β. *hebecarpa* Lindbl. Linnaea, xiii. 322 (1839). *D. rupestris* β. *stricta* b. *hebecarpa* Lindbl. Bot. Notiser (1841) 222 (1841). *D. rupestris*, * *trichella* (Fries) Nyman, Consp. i^1. 53 (1878). *D. hirta*, * *trichella* (Fries) Hartm. Handb. Skand. Fl. ed. 11: 206 (1879). *D. hirta*, β. *hebecarpa* (Lindbl.) Strömfelt, Öfvers. Kgl. Vet.-Akad. Forhandl. 1884, no. 8: 110 (1885).—Northern Europe; Greenland; northwestern Newfoundland. Newfoundland: turfy limestone barrens, Burnt Cape, Pistolet Bay, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*, nos. 28,385, 28,387; upper border of limestone gravel-beach and shaded limestone escarpments, Burnt Cape, *Fernald & Long*, nos. 28,397, 28,398; turfy limestone barrens, Capstan Point, Flower Cove, *Fernald, Long & Dunbar*, no. 26,712, in part (mixed with glabrous-fruited plant); gravelly talus of limestone sea-cliffs and dry gravelly limestone barrens, Pointe Riche, *Fernald, Long & Fogg*, nos. 1742, 1744; all distributed as *D. hirta* L. (see discussion under *D. glabella*) or as *D. rupestris* R. Br.

Var. **pleiophylla**, var. nov. (tab. 302), caulibus fructiferis 0.5–2.7 dm. altis; foliis caulinis 6–18; siliquis glabris.—Northwestern Newfoundland and adjacent Quebec Labrador. Newfoundland: shelves, crests and talus of diorite cliffs, Ha-Ha Mountain, *Fernald & Long*, nos. 28,399, 28,400 (in part; mixed with typical *D. norvegica*); turfy limestone barrens, Burnt Cape, July 17, 1925, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*, nos. 28,380 (type in Gray Herb., some specimens misnumbered 20,380), 28,383; turfy limestone slopes near the sea, east of Big Brook, Straits of Belle Isle, *Fernald & Long*, no. 28,407; limestone escarpments on the Highlands northeast of Big Brook, *Pease & Griscom*, no. 28,378; peaty and turfy pockets in limestone barrens, Brig Bay, *Fernald, Long & Dunbar*, no. 26,705; dry gravelly limestone barrens, St. John Island, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 28,394; dry limestone cliffs and talus, western face of Doctor Hill, *Fernald &*



Map 13. Range of Draba norvegica, var. pleiophylla.

Long, no. 28,408ᵃ; gravelly limestone barrens near the sea, Eddy's (or Old Man's) Cove, St. John Bay, *Fernald, Long & Fogg*, no. 1748; turfy and gravelly shore, Back (or Bustard) Cove, *Fernald, Long & Fogg*, no. 1747; limestone ledges in dry clearing, Port au Choix, *Fernald, Long & Fogg*, no. 1746; turfy talus of limestone sea-cliffs at base of Pointe Riche, *Fernald, Long & Fogg*, no. 1750. QUEBEC ("LABRADOR"): limestone and calcareous sandstone terraces and crests, Blanc Sablon, *Fernald & Wiegand*, nos. 3460, 3461 (as *D. arabisans*, var. *orthocarpa*), 3462, 3463, *Fernald, Wiegand & Long*, no. 28,412 (transitional). All (unless otherwise noted) distributed as *D. hirta* L. (see discussion under *D. glabella*) or as *D. rupestris* R. Br. MAP 13.

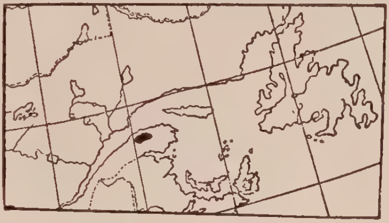
Although European (PLATE 301, FIG. 1) and Greenland material of *Draba norvegica* has few (and sometimes no) cauline leaves, the plant of Newfoundland and adjacent Quebec varies from individuals (PLATE 301, FIGS. 2–5) inseparable from authentic European specimens and from the beautiful plate in Flora Danica (t. mmmxxxiii.) to a more leafy extreme (PLATE 302), such as seems to be unknown in Europe, var. *pleiophylla*. In this leafy extreme *D. norvegica* approaches a number of species of the Gulf of St. Lawrence area. The plant of the Shichshock Mountains (PLATE 303), however, is separable by its narrower cauline leaves, smaller flowers, narrow siliques and longer pedicels. The stout *D. laurentiana* (PLATES 304, 305), occurring in much the same area as *D. norvegica* and its var. *pleiophylla*, is coarser throughout, with the foliage essentially lacking the simple trichomes which characterize the leaves of *D. norvegica*, usually more numerous leaves, larger flowers in relatively shorter racemes and more numerous seeds. In some of its forms *D. norvegica* approaches *D. glabella*, one of the commonest and most variable species about the Gulf of St. Lawrence; but *D. glabella* (PLATE 307) mostly lacks the simple pubescence on leaves and stems, being stellate-pannose.

As already noted, the distinctions between the larger plants (PLATE 293) of *Draba rupestris* R. Br. (1812) and the smaller plants of *D. norvegica* Gunner (1772) with 1 cauline leaf (or with this lacking) are not wholly satisfactory. *D. rupestris* is more delicate or slender; but I anticipate the merging of the two when the latter extreme has been more collected and studied on our northern barrens and shores. We should then have a species characterized by very narrow and hispid rosette-leaves, hispid stems, and hispid, ovate cauline leaves varying from 0 to 18, awkward for key-making, to be sure, but rather typical of the vagaries of *Draba*. If, furthermore, we were to abandon the characters of pubescence now relied upon, *D. norvegica*, as the oldest name, would be applicable likewise to a large series of stellate-pannose plants of the boreal regions now maintained as distinct species.

Schulz, who recognized no true *Draba norvegica* nor its pubescent-fruited var. *hebecarpa* from North America, cited a single collection (plate 303, fig. 1) from the Shickshock Mts. of Gaspé (*Dodge, Griscom & Pease*, no. 25,773) as belonging to his *D. norvegica*, var. *laxa* (Lindbl.) O. E. Schulz, of the Dovre Alps of Norway. Lindblom's *D. laxa* α. *legitima*, upon which Schulz's variety was based, was, apparently, not essentially different from *D. norvegica* Gunn. and described "scapis 1–2-phyllis." Lindblom explicitly cited *D. norvegica* "(descr. vitiosa)" and also cited the identical plate upon which Gunner had based *D. norvegica: "Fig.* Dr. an pyrenaica *Fl. Dan. t.* 143 (mala)." This illustration, although properly characterized by Lindblom as "mala," shows no cauline leaves and the Flora Danica plate of it cited by Schulz for *D. norvegica*, var. *laxa* has 0–4 cauline leaves. The sheet of the Gaspé plant (no. 25,773) preserved in the Gray Herbarium has more numerous (8–13) and narrower cauline leaves, much smaller flowers and more slender siliques on longer pedicels than in *D. norvegica* and, consequently, than in *D. laxa*, which was based in part on *D. norvegica*. It seems to represent an endemic species, which I am calling *D. clivicola*.

13. D. **clivicola**, sp. nov. (tab. 303), planta humifusa stragula 3–15 cm. diametro formans; caudiculorum ramis ramulisque pallidis inferne foliis emortuis plus minusve fibrillosis squamatis, superne foliis rosulatis cespitem laxum 1.3–3 cm. diametro formantibus; foliis rosulatis lineari-oblanceolatis acutis 0.4–1.5 cm. longis 1–5 mm. latis integris vel marginibus utrinque 1–3-incisis plus minusve hirtellis pilis simplicibus furcatis stellatisque; caulibus floriferis filiformibus flexuosis simplicibus vel ramosis, fructiferis 0.3–3 dm. altis basi hirtellis; foliis caulinis 3–13 (av. 7), lanceolatis vel anguste ovatis 0.5–1.7 cm. longis 1.5–6 mm. latis hispidulis inciso-serratis vel integris; racemis floriferis confertis fructiferis elongatis laxis 2–13 cm. longis 5–19-floris; pedicellis imis fructiferis 4–10 mm. longis, saepe bracteatis; sepalis oblongis 1.6–2 mm. longis 0.4–0.9 mm. latis glabris vel sparse hirtellis; petalis lacteis anguste obovatis 2.8–4 mm. longis 1–1.5 mm. latis; antheris 0.3 mm. longis; ovariis glabris 16–26-ovulatis; siliculis glabris linearibus vel lineari-lanceolatis stigmato capitato coronatis 7–12 mm. longis 2–2.5 mm. latis, valvis obsolete reticulato-venosis; seminibus a funiculis 0.2 mm. longis pendulis ellipticis 1–1.3 mm. longis.—Shickshock Mts., Matane Co., Quebec: wet hornblende-schist at base of Big Chimney, altitude 400–600 m., Mt. Mattaouisse, July 22, 1922, *Fernald & Pease*, no. 25,096 (distributed as from "Mt. Logan"); schistose talus and wet shelves at base

of Big Chimney, July 10, 1923, *Dodge, Griscom & Pease*, no. 25,773 (TYPE in Gray Herb.); cold schistose walls at head (alt. 1070 m.) of Big Chimney, July 14, 1923, *Fernald, Griscom, Pease & Smith*, no. 25,789; cold chimneys in the schist at about 900–1000 m. alt., south of Fernald Pass, Mt. Mattaouisse, August 20, 1923, *Fernald & Smith*, no. 25,777; talus of mica-schist, chimney east of Razorback Ridge (alt. 850–1000 m.), Mt. Logan, July 13, 1923, *Pease & Smith*, no. 25,774; schistose talus at about 800–950 m. alt., Pease Basin, between Mts. Logan and Pembroke, July 13, 1923, *Pease & Smith*, no. 25,771 (exceptionally broad-leaved, cauline leaves to 6 mm. broad); cliffs and chimneys at about 800–1050 m. alt., east of Big Cascade, Pease Basin, between Mts. Logan and Pembroke, July 16, 1923, *Dodge & Pease*, no. 26,130; dry talus and ledges of green schists, at about 900–1125 m., Hanging Valley, Mt. Pembroke, July 16, 1923, *Griscom & Pease*, no. 25,775, 25,776, August 24, 1923, *Fernald & Smith*, no. 25,778. All distributed as *D. rupestris*. MAP 14.



MAP 14. Range of DRABA CLIVICOLA.

Draba clivicola, which was distributed as *D. rupestris* R. Br., differs quite obviously from that species in its very leafy stems, *D. rupestris* being typically scapose. Its reference to *D. norvegica* by Schulz has been noted in the discussion of the latter species; but it is sufficiently clear from that in its narrower cauline leaves, smaller flowers, more slender fruit and longer lower pedicels. So far as yet known, it is confined to the somewhat calcareous schistose upper slopes of the Mt. Logan region in Gaspé, a peculiarly notable area, where *D. clivicola* is associated with other endemic or near-endemic species: *Festuca prolifera* (Piper) Fern.,[1] *Draba Allenii* (see above), *Saxifraga gaspensis* Fern.[2] and *Vaccinium nubigenum* Fern.;[3] and such species, separated by hundreds or thousands of miles from their specific allies, as *Draba nivalis* Liljebl., *Potentilla emarginata* Pursh,[4] *Euphrasia Williamsii* Robinson, *Campanula uniflora* L.,[5] *Arnica Louiseana* Farr[6] and *Senecio resedifolius* Less.[7]

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[1] RHODORA, xxxv. 133, map 14 (1933).

[2] RHODORA, xix. 141 (1917).

[3] See RHODORA, xxxv. 279, map 23 (1933).

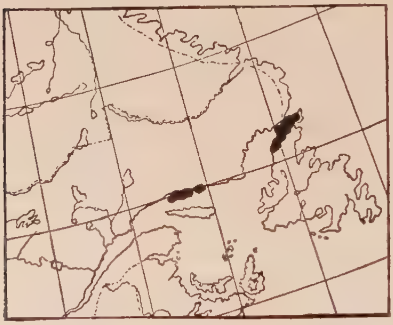
[4] The plant identified and reported as *P. fragiformis* Willd. in Mem. Amer. Acad. xv. 280 (1925) is, according to the late Dr. Malte, *P. emarginata*.

[5] See Mem. Amer. Acad. xv. 338 (1925).

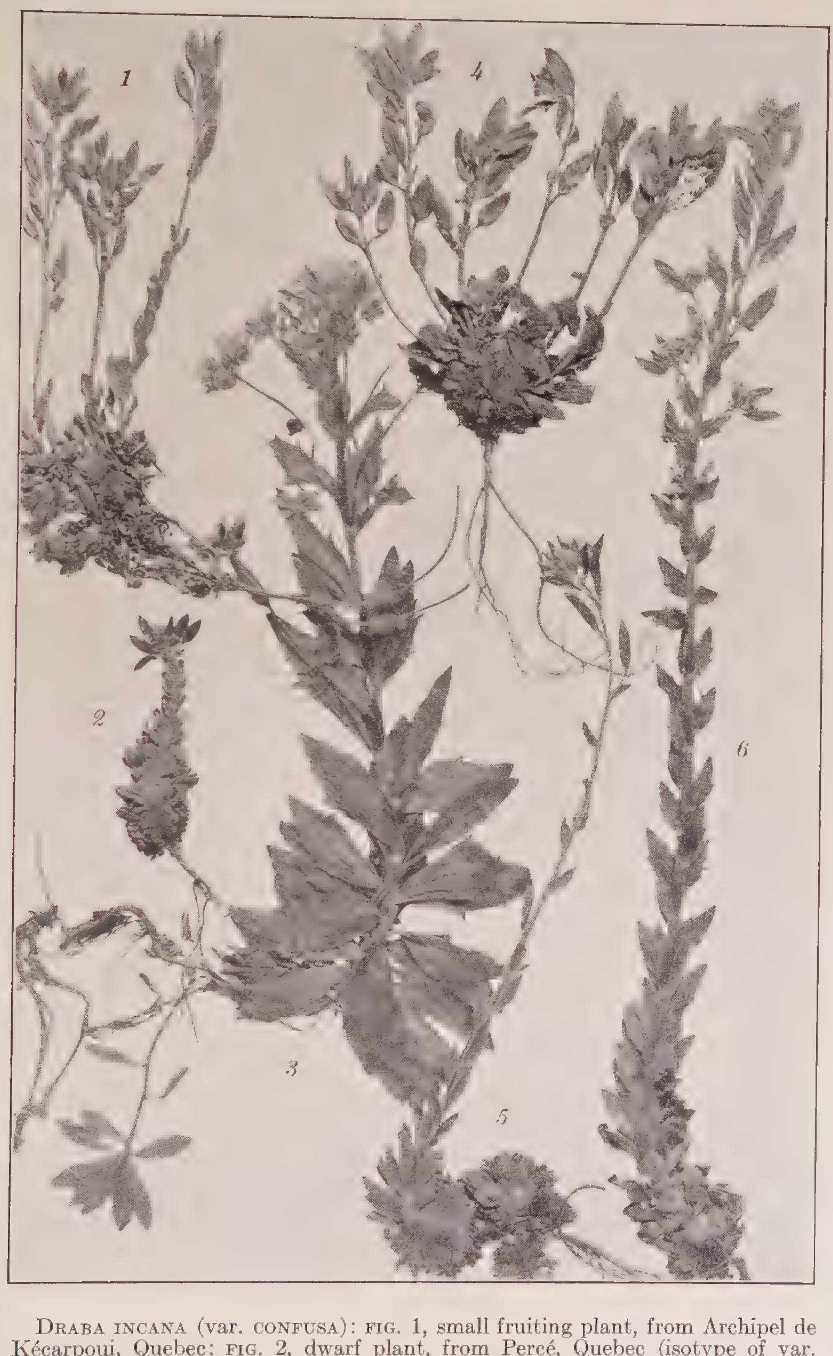
[6] See RHODORA, xxxv. 369, map 30 (1933).

[7] See RHODORA, xxvi. 113 (1924); also Mem. Amer. Acad. xv. 260, and map 29, p. 259 (1925).

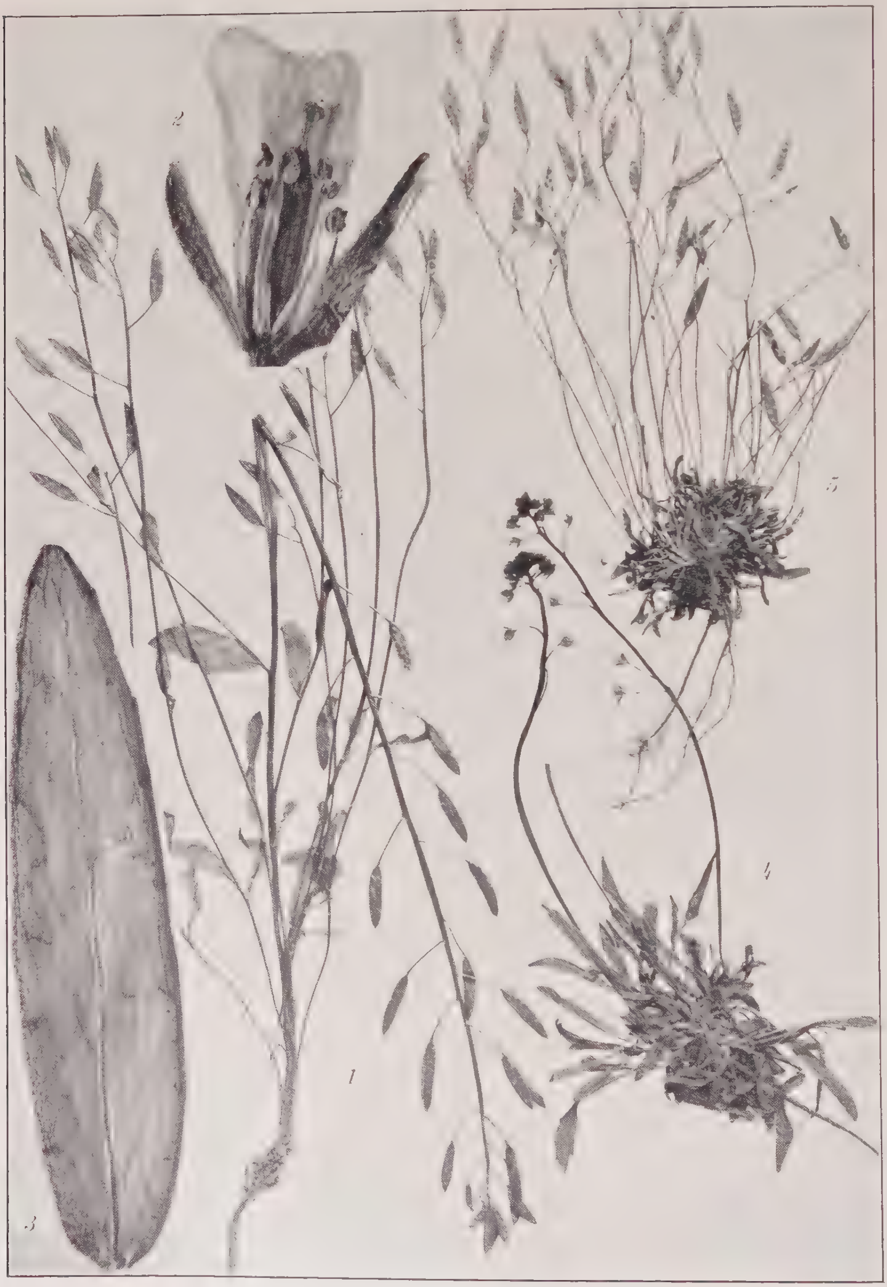
14. D. **laurentiana,** sp. nov. (TABS. 304, 305), planta humifusa stragula 3–15 cm. diametro formans; caudiculorum ramis ramulisque albescentibus nitidis inferne foliis emortuis fibrillosis squamatis, superne foliis rosulatis cespitem 1.5–7 cm. diametro formantibus; foliis rosulatis cuneato-oblanceolatis 0.7–3.8 cm. longis 4–9 mm. latis crassis firmis acutis vel subacutis vel marginibus utrinque 1–3-dentatis stellato-pannosis; caulibus floriferis crassis simplicibus vel sparse ramosis, fructiferis 1–3.5 dm. altis imis piloso-hirsutis pilis simplicibus furcatis stellatisque admixtis; foliis caulinis (3) 6–25 (av. 10) oblongis plerumque 1–3 cm. longis 3–11 mm. latis argute 2–4-serrato-dentatis stellato-pannosis; racemis floriferis corymbiformibus fructiferis laxe elongatis 3–15 cm. longis 6–30-floris; pedicellis imis fructiferis 1.5–6 mm. longis ebracteatis vel rare bracteatis; sepalis ovalibus vel late oblongis late albido-marginatis 2.3–3 mm. longis 1.3–2.3 mm. latis; petalis lacteis late obovatis emarginatis 4.5–5 mm. longis 2.5–4 mm. latis; antheris 0.4 mm. longis; ovariis glabris 20–40-ovulatis; siliculis glabris oblongis ellipticis vel oblongo-lanceolatis planis vel tortis stylo brevissimo (0.1–0.4 mm. longo) coronatis 5–14 mm. longis 2–4 mm. latis, valvis valde reticulato-venosis vel rugulosis; seminibus a funiculis 0.3 mm. longis pendulis ellipticis 1–1.3 mm. longis.—Shores of the Gulf of St. Lawrence and Straits of Belle Isle, Newfoundland and eastern Quebec. NEWFOUNDLAND: limestone ledges, Schooner (or Brandy) Island, Pistolet Bay, July 18, 1925, *Pease & Long*, no. 28,359; dry rocky and gravelly limestone barrens, Cape Norman, July 18, 1925, *Wiegand, Griscom & Hotchkiss*, no. 28,360; turfy seashore east of Big Brook, July 15, 1925, *Pease & Griscom*, no. 28,357; Green Island, Straits of Belle Isle, July 24, 1925, *Griscom*, no. 28,364; fields and meadows, Flower Cove, July 12, 1920, *M. E. Priest*, no. E1; turfy limestone shore, Capstan Point, Flower Cove, July 10, 1925, *Fernald, Griscom & Gilbert*, no. 28,355; limestone ledges and gravel near the sea, St. Barbe, August 4, 1924, *Fernald, Long & Dunbar*, no. 26,713; turfy upper margin of limy gravel beach, Brig Bay, August 6, 1924, *Fernald, Long & Dunbar*, no. 26,714; turf overlying limestone, Grassy Island, St. John Bay, August 5, 1929, *Fernald, Long & Fogg*, no. 1731 (TYPE in Gray Herb.). QUEBEC: "Labrador," *Martin;* sur un îlôt de calcaire, riche en guano, Îslets de la Baie à Jean, 25 juillet, 1924, *Victorin & Rolland*, no. 18,256 (as *D. arabisans*); sur les rochers calcaires, Île Ste. Généviève, Mingan, 17 juilliet, 1924, *Victorin & Rolland*, no.



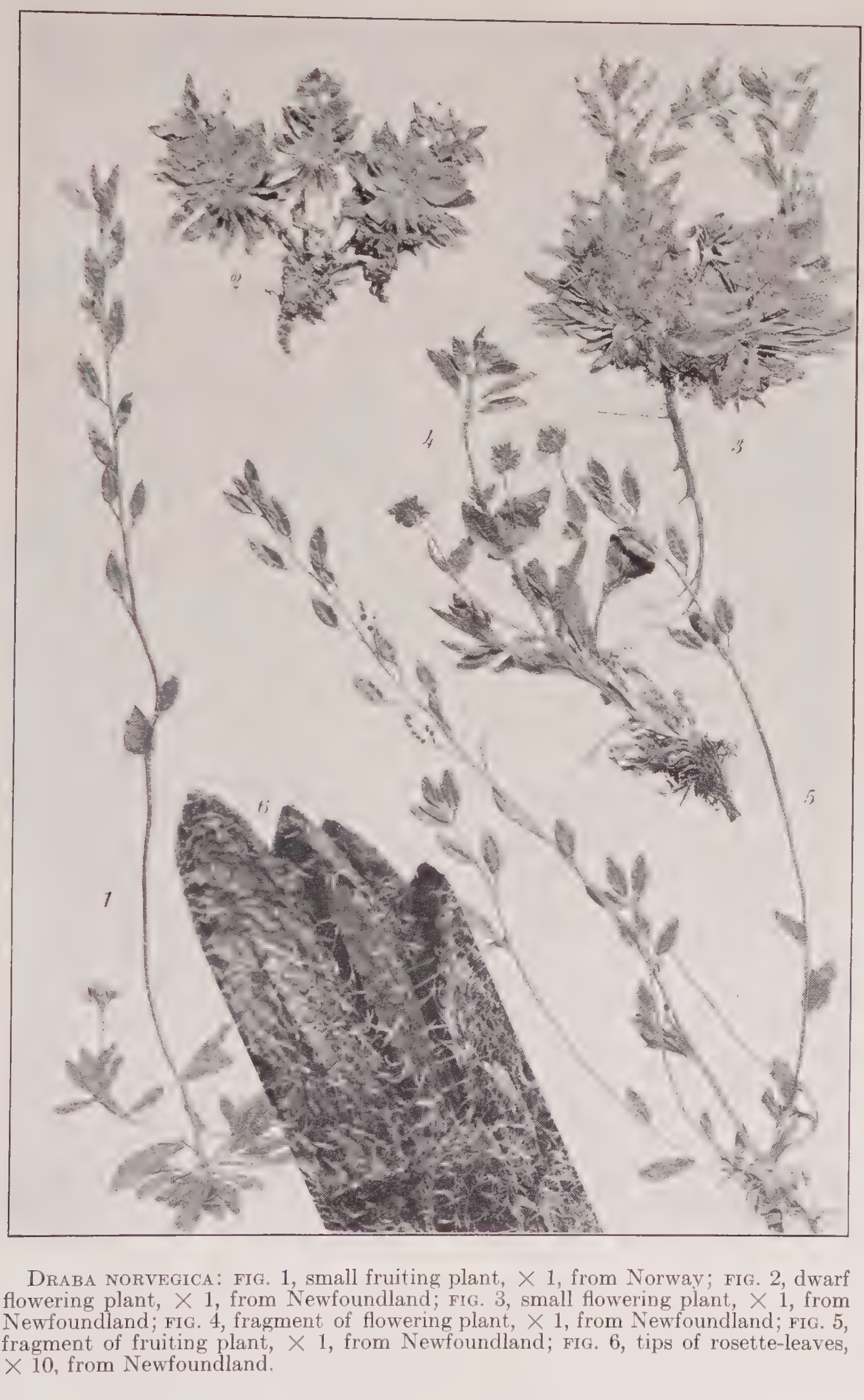
MAP 15. Range of DRABA LAURENTIANA.



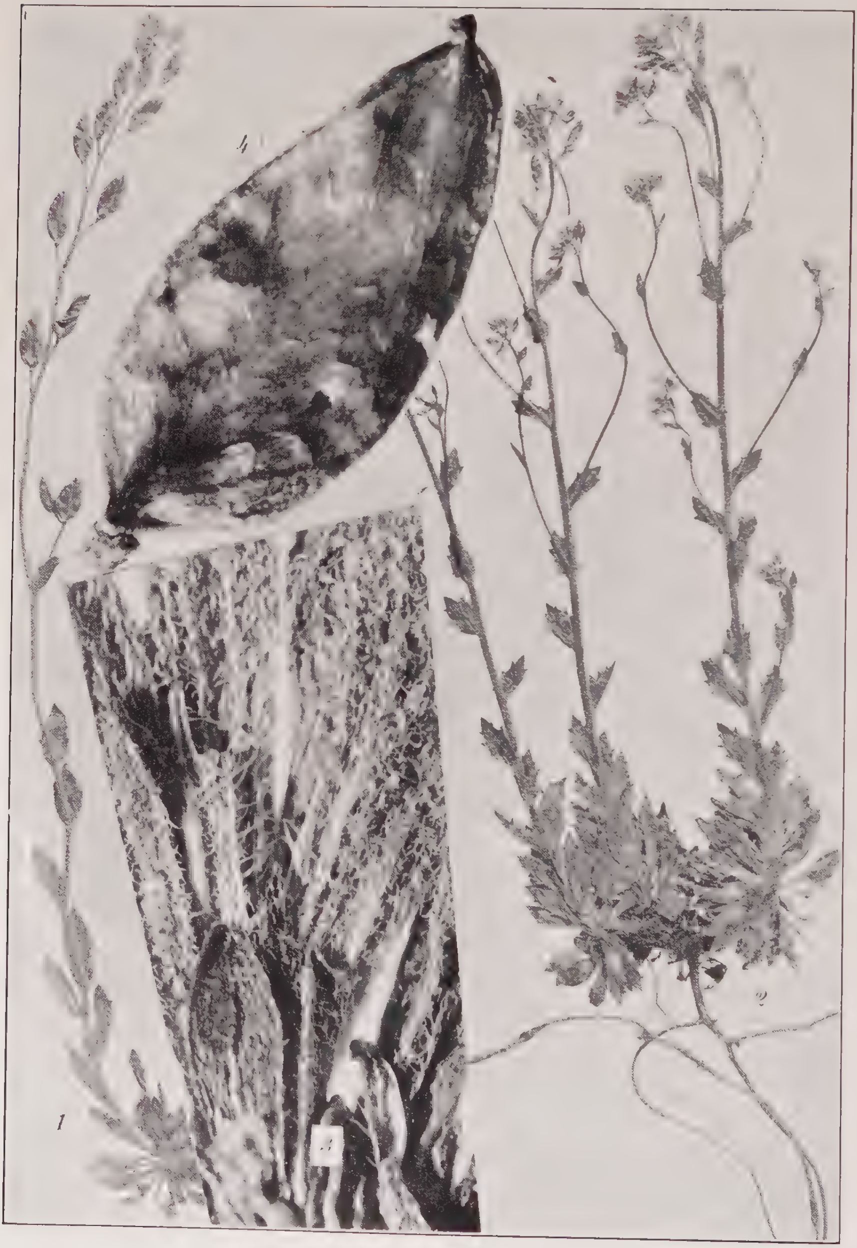
Draba incana (var. confusa): fig. 1, small fruiting plant, from Archipel de Kécarpoui, Quebec; fig. 2, dwarf plant, from Percé, Quebec (isotype of var. *conica*); fig. 3, flowering plant, from Cow Head, Newfoundland; fig. 4, small fruiting plant, from Newfoundland; fig. 5, slender plant, from same station as fig. 2; fig. 6, leafy plant, from Baie à Jean, Quebec; all × 1.



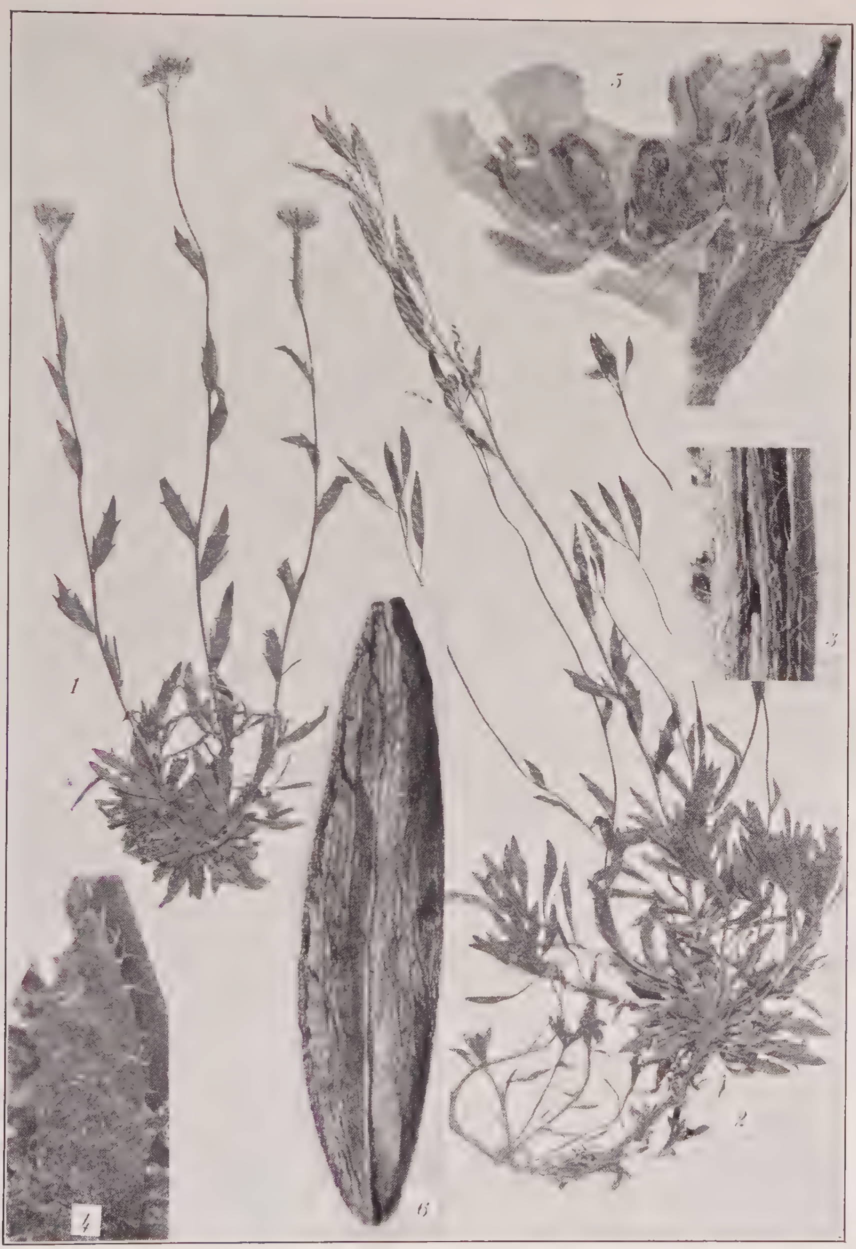
Draba Sornborgeri, n. sp.: fig. 1, portion of fruiting plant, × 1, from Ramah, Labrador (type); fig. 2, flower, × 10, from Ramah; fig. 3, valve, × 10, from the type.
D. crassifolia, var. Parryi: figs. 4 and 5, flowering and fruiting plants, × 1, from Gray's Peak, Colorado.



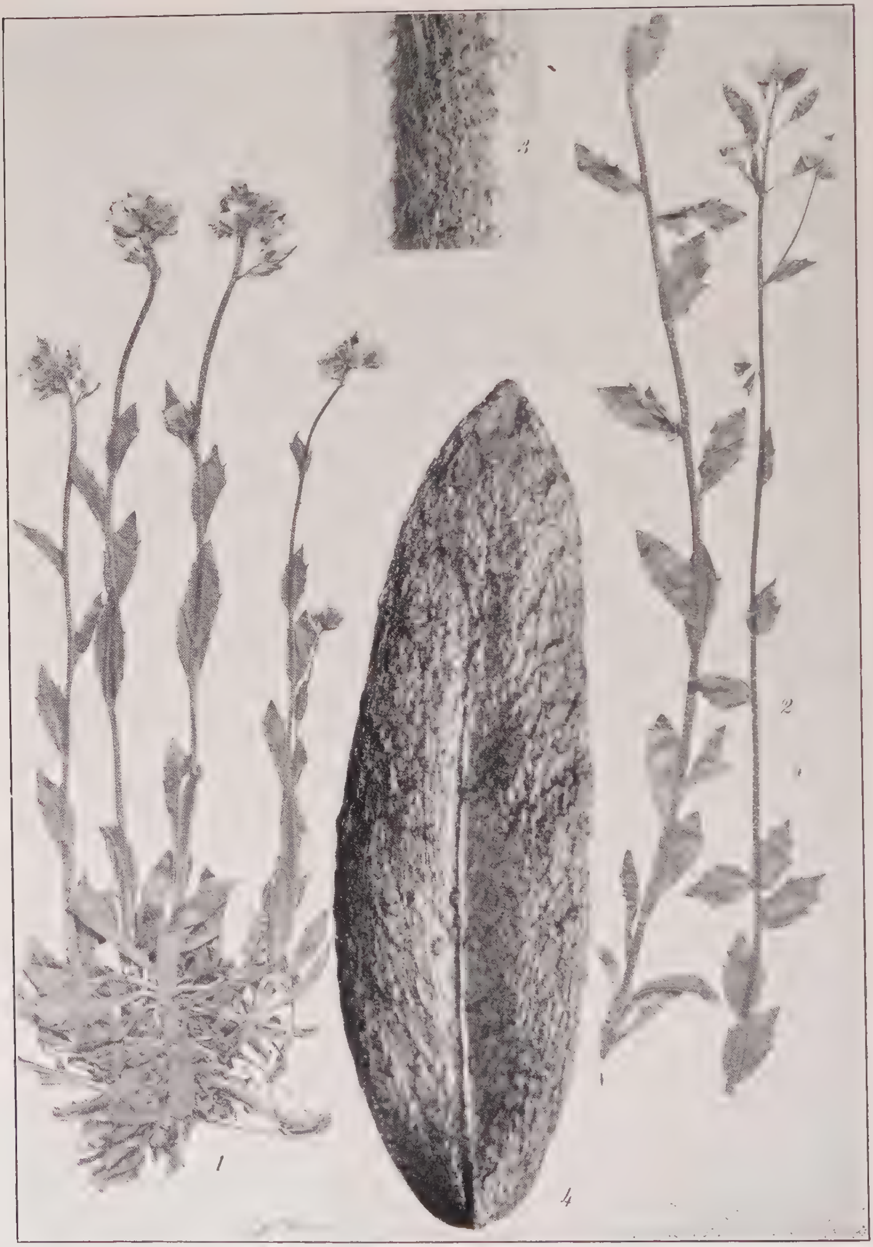
DRABA NORVEGICA: FIG. 1, small fruiting plant, × 1, from Norway; FIG. 2, dwarf flowering plant, × 1, from Newfoundland; FIG. 3, small flowering plant, × 1, from Newfoundland; FIG. 4, fragment of flowering plant, × 1, from Newfoundland; FIG. 5, fragment of fruiting plant, × 1, from Newfoundland; FIG. 6, tips of rosette-leaves, × 10, from Newfoundland.



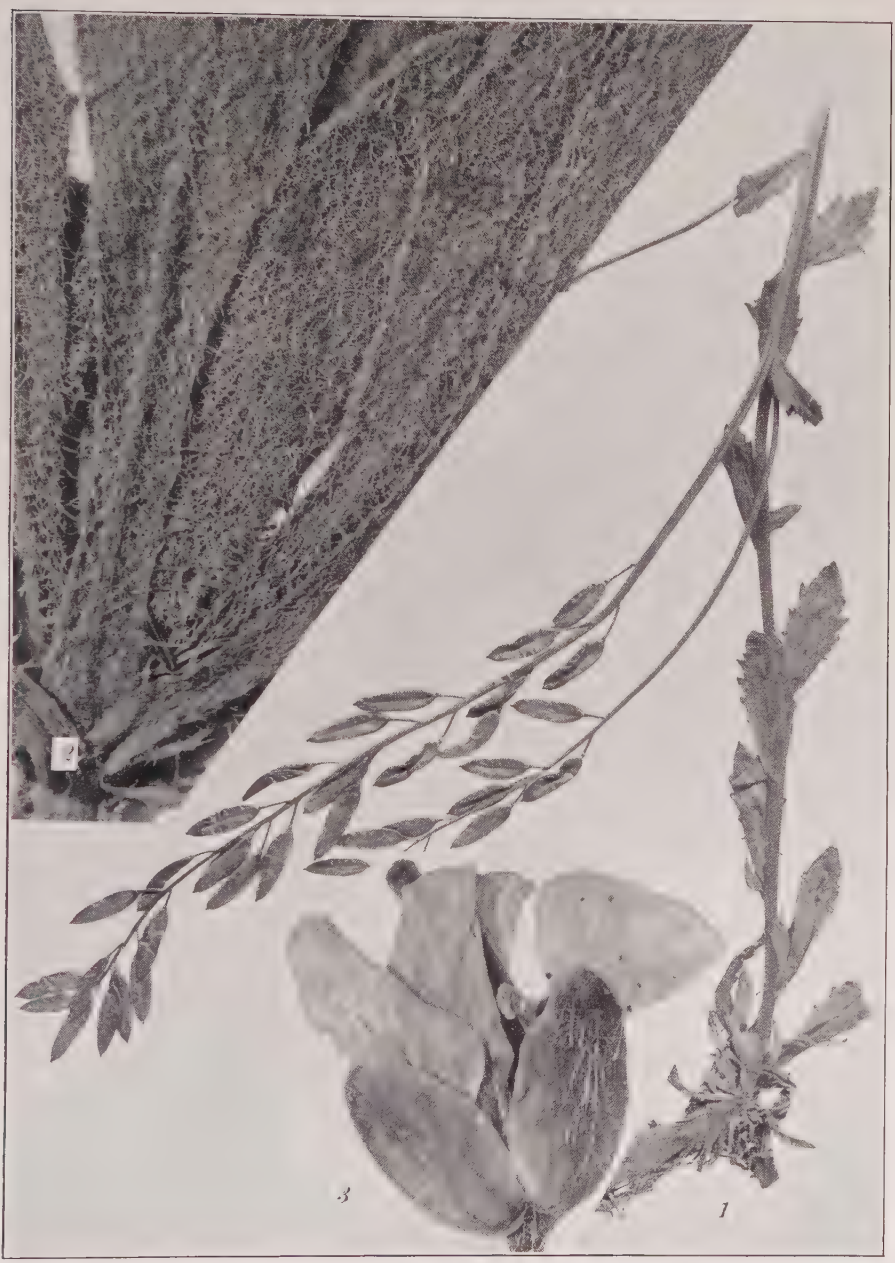
DRABA NORVEGICA, var. PLEIOPHYLLA, n. var.: FIG. 1, portion of fruiting plant, × 1; FIG. 2, flowering plant, × 1 (TYPE); FIG. 3, rosette-leaves and lowest internode, × 10; FIG. 4, silique, × 10; all from Newfoundland.



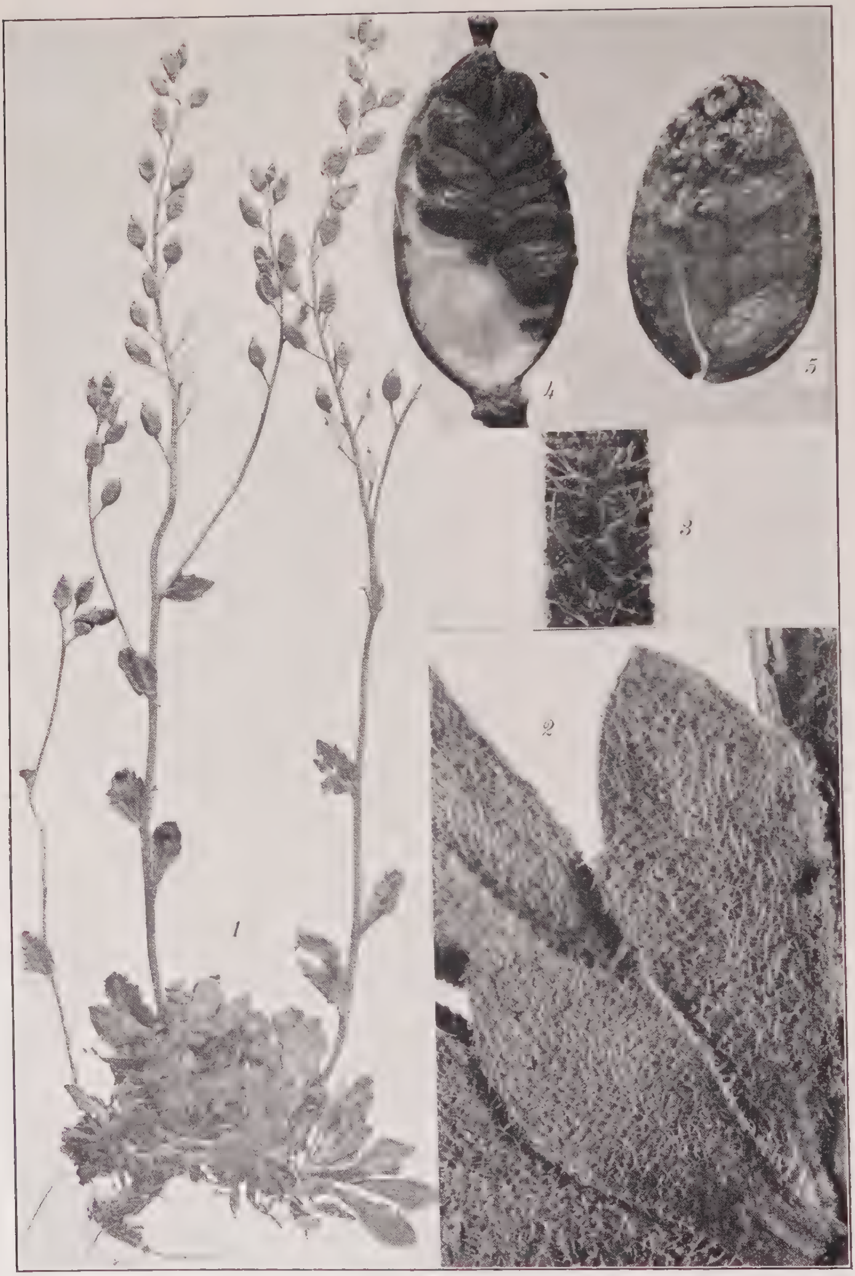
DRABA CLIVICOLA, n. sp.: FIGS. 1 and 2, flowering and fruiting plants, × 1 (TYPE); FIG. 3, portion of internode, × 10; FIG. 4, tip of rosette-leaf, × 10; 5, flowers, × 10; FIG. 6, valve of ripe silique, × 10; all from Shickshock Mts., Quebec.



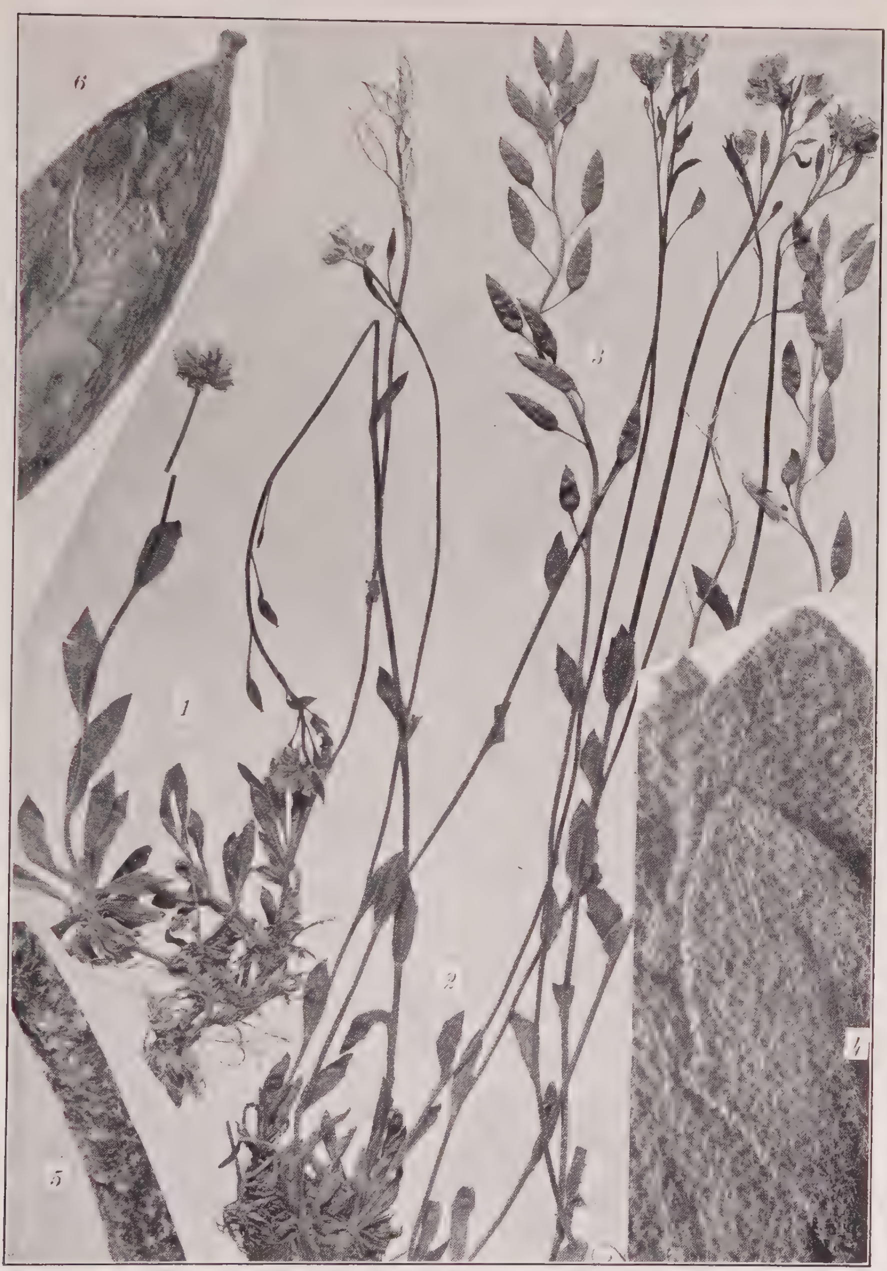
Draba laurentiana, n. sp.: fig. 1, small flowering plant, × 1, from Newfoundland; fig. 2, portion of tall flowering plant (divided), × 1, from Archipel de Mingan, Quebec; fig. 3, portion of internode, × 10, from Newfoundland (type); fig. 4, valve of ripe silique, × 10, from the type.



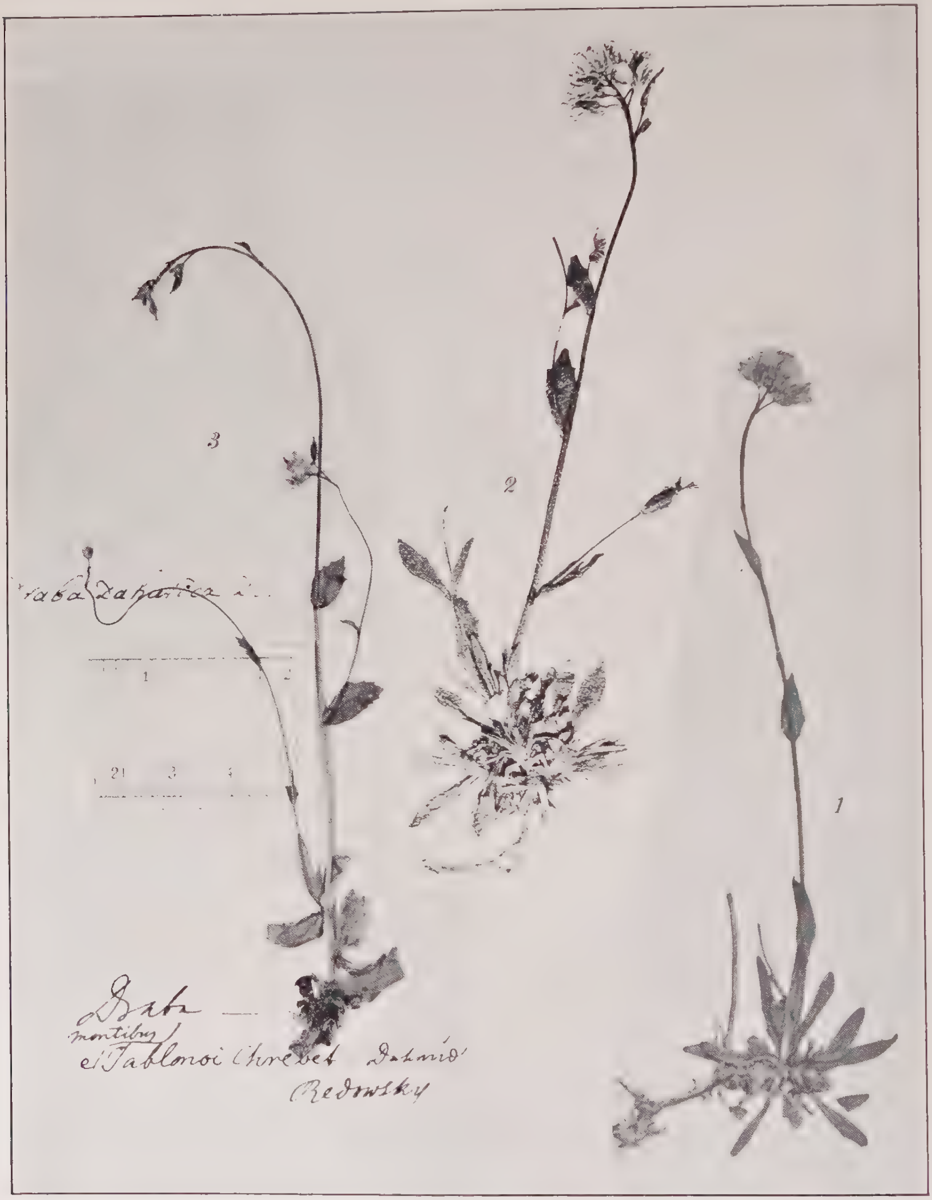
Draba laurentiana, n. sp.: fig. 1, portion of fruiting plant, × 1, from the type; fig. 2, portion of basal rosette, × 10, from the type; fig. 3, flower, × 10, from Newfoundland.



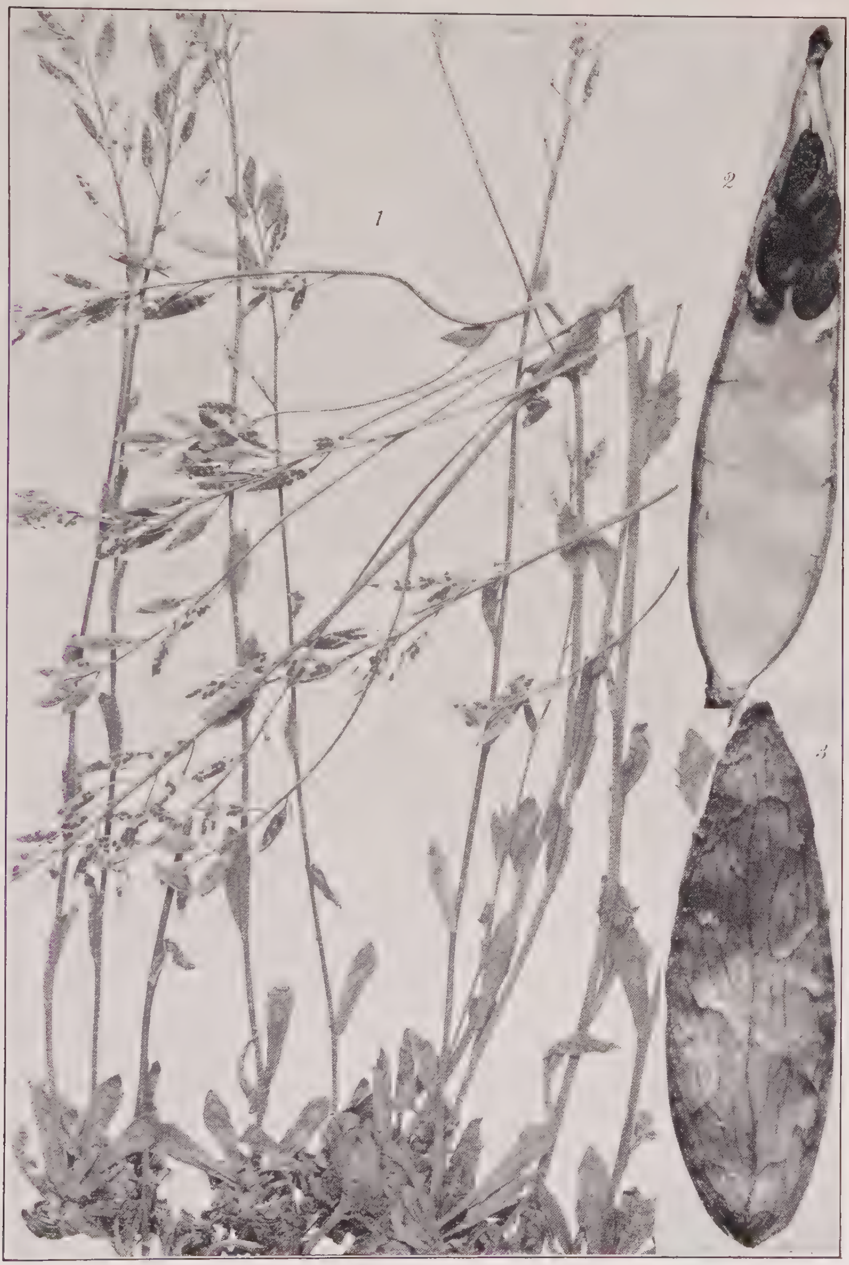
DRABA PYCNOSPERMA: FIG. 1, small fruiting plant from Île Bonaventure, Quebec; FIG. 2, rosette-leaves, × 10, from same station; FIG. 3, portion of internode, × 10, from Percé, Quebec; FIG. 4, septum and seeds, × 10, from Percé; FIG. 5, valve, × 10, from Percé.



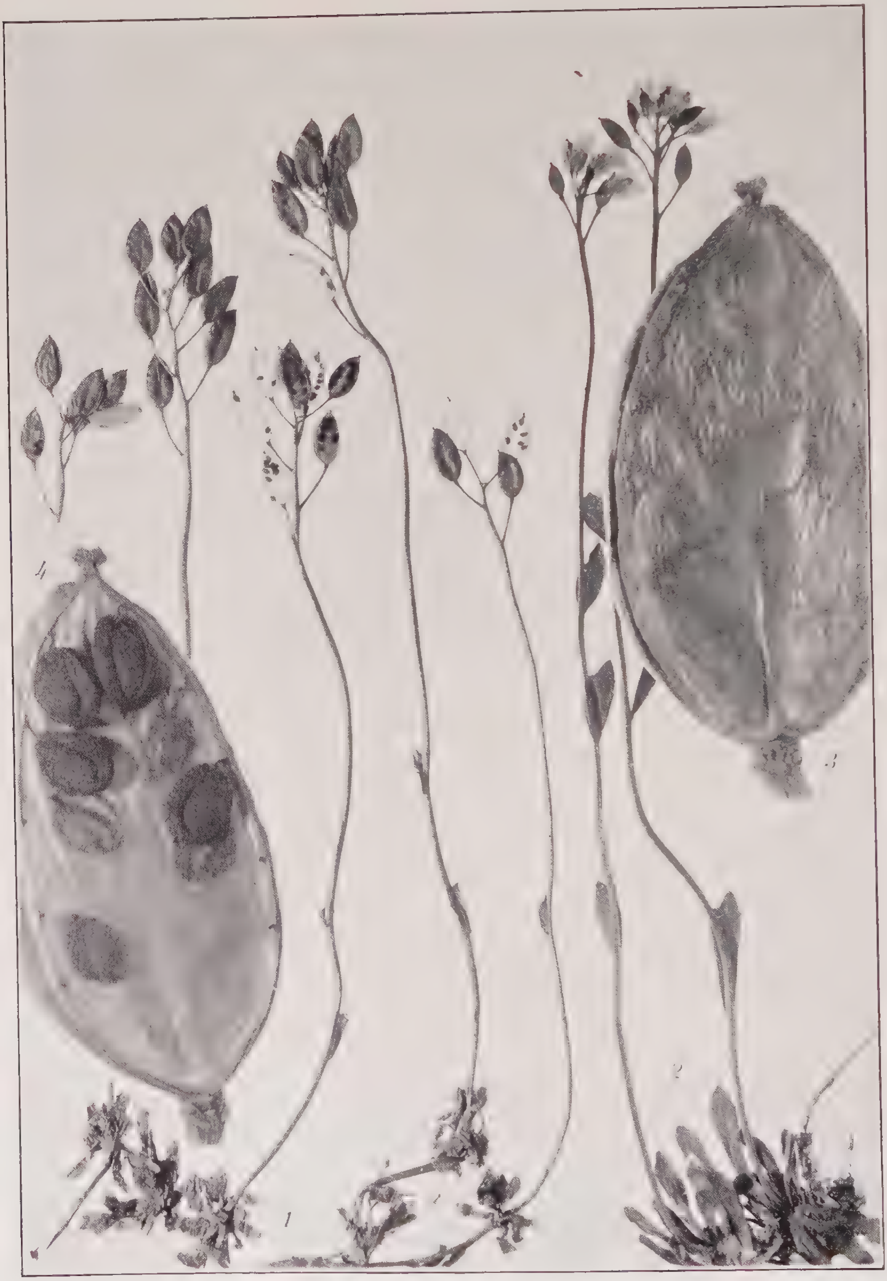
DRABA GLABELLA: FIG. 1, flowering plant, × 1, from Newfoundland; FIG. 2, flowering plant, × 1, from Labrador; FIG. 3, fruiting stems, × 1, from near Nain, Labrador (type region of *D. Henneana*); FIG. 4, portion of basal rosette, × 10, from Newfoundland; FIG. 5, portion of internode, × 10, from Labrador; FIG. 6, tip of silique, × 10, from Newfoundland.



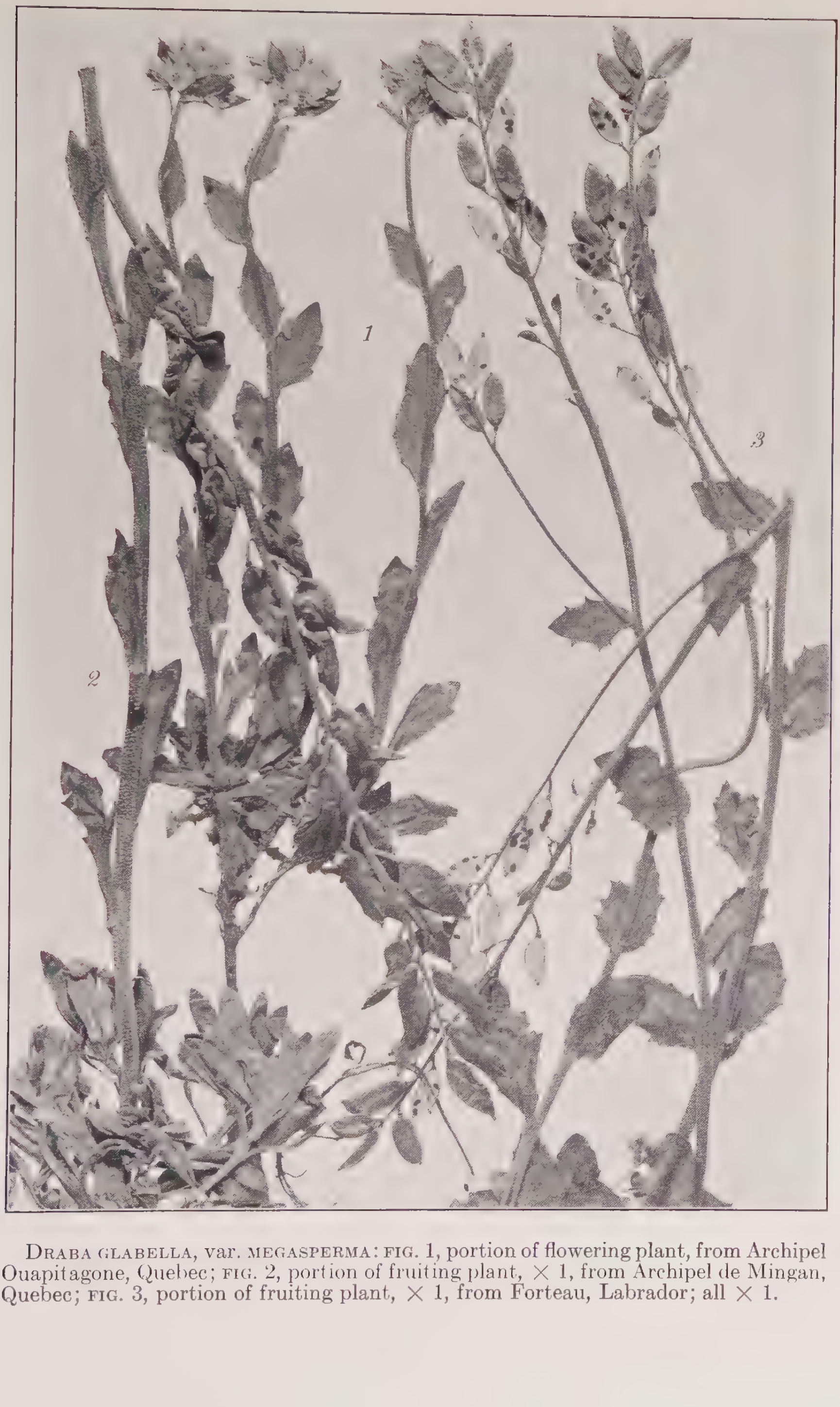
DRABA GLABELLA: FIG. 1, TYPE, × 1, in Herb. Brit. Mus. (photograph from the Keeper, Mr. J. RAMSBOTTOM); FIG. 2, type of *D. Henneana*, × 1, in Herb. Bot. Mus. Berlin-Dahlem (photograph by *L. B. Smith*, from original specimen loaned by the Curator, Professor JOHANNES MILBRAED); FIG. 3, type of *D. daurica*, × 1, in Herb. De Candolle, Genève (photograph presented by Dr. ALFRED BECHERER and Mr. J. F. MACBRIDE).



DRABA GLABELLA, var. ORTHOCARPA: FIG. 1, TYPE, × 1, from Bic, Quebec; FIGS. 2 and 3, septum with seeds, and valve, × 10, from TYPE.



DRABA GLABELLA, var. BRACHYCARPA: FIG. 1, fruiting stems, × 1, from Greenland; FIG. 2, flowering plant, × 1, from Greenland; FIGS. 3 and 4, silique and septum with seeds, × 10, from fig. 2.



DRABA GLABELLA, var. MEGASPERMA: FIG. 1, portion of flowering plant, from Archipel Ouapitagone, Quebec; FIG. 2, portion of fruiting plant, × 1, from Archipel de Mingan, Quebec; FIG. 3, portion of fruiting plant, × 1, from Forteau, Labrador; all × 1.

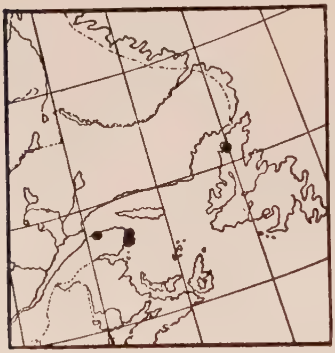
18,253; sur le cailloutis calcaire, Côté du Large, Île Ste. Généviève, 9 août, 1925, *Victorin & Rolland*, 21,477; rivages calcaires, Île Nue, Mingan, 29 juillet, 1926, *Victorin & Rolland*, no. 24,863; sur le cailloutis calcaire, Île à la Vache Marine, Mingan, 16 juillet, 1924, *Victorin & Rolland*, no. 18,251, as *D. arabisans;* sur les corniches calcaires, Île Quin, Mingan, 28 juillet, 1924, *Victorin & Rolland*, no. 18,244, as *D. arabisans*, var. *canadensis* (small bushy-branched and small-fruited extreme); sur les corniches calcaires, Île du Fantome, Mingan, 28 juillet, 1924, *Victorin & Rolland*, no. 18,246; sur le calcaire couvert de guano, Îlets Perroquets, Mingan, 5 août, 1924, *Victorin & Rolland*, no. 18,252, as *D. arabisans;* without statement of locality, Anticosti, June 26, 1861, *Hyatt, Shaler & Verrill.* Unless otherwise stated, distributed as *D. megasperma.* MAP 15.

Draba laurentiana is one of the coarser species of eastern America. Although confused in the herbarium with *D. glabella* Pursh, var. *megasperma* (Fern. & Knowlton) Fern. (PLATES 311, 312) and sometimes with *D. arabisans* Michx. (PLATES 314, 315), it stands apart from them both in the abundant spreading and simple pubescence of the lower internodes of the coarse flowering stems; *D. megasperma*, which is better treated as a large extreme of *D. glabella* Pursh, having the stems coarsely stellate-pannose, *D. arabisans* having them more finely stellate. The cauline leaves of *D. laurentiana* are commonly very numerous, usually 6–25 (average 10), those of *D. glabella* and its varieties few, 0–8, very rarely to 13 (average 4), and in *D. arabisans* they are much more narrowed at base and only 3–12 in number. The flowers of *D. laurentiana* are very large and the siliques distinctly rugose-veiny, with almost no style, while the silique of *D. arabisans* is veinless and long-styled. *D. glabella*, var. *megasperma*, in its largest development, is very similar to the less leafy plants of *D. laurentiana* and the two probably cross. In view of the marked difference in the pubescence of their lower internodes they are here treated as different species. It may later seem wiser to unite them as varieties of one variable species.

In northwestern Newfoundland and on the Mingan Islands *Draba laurentiana* has its greatest development, the material thought to be from Anticosti possibly having been actually collected elsewhere. In sharing the Gulf coast of Newfoundland and the Mingan Islands and, though only locally or doubtfully, Anticosti, it becomes one of a large series of species of similar occurrence: *Listera borealis* Morong, *Lesquerella Purshii* (Wats). Fern., *Arctostaphylos rubra* (Rehder & Wilson) Fern., *Arnica chionopappa* Fern., *Taraxacum laurentianum*

Fern., etc., which are each found on two or more of these segregated areas.

15. D. PYCNOSPERMA Fern. & Knowlt. Cespitose *perennial,* forming close or loose mats 0.2–2.5 dm. across: the pale slender mostly forking *caudices* retaining shreds of dead old leaves and *often with persistent bases of stellate trichomes,* ending in prostrate rosettes 1.5–10 cm. across: *rosette-leaves cuneate-spatulate to narrowly rhombic,* 0.7–5 cm. long, 2–15 mm. broad, entire or shallowly 1–3-dentate above the middle on each side, *finely and closely stellate-pannose: flowering stems* simple or with long ascending branches, in fruit 0.5–3.3 dm. high, very slender, *loosely to densely stellate-pubescent, often with admixture of forking and simple trichomes: cauline leaves* 1–4, *oblong to ovate,* 0.5–3 cm. long, 0.2–2 *cm. broad,* entire or 1–3-dentate on each margin, *sparsely hirsute* with simple, bifurcate and stellate trichomes *or glabrate: racemes in fruit very slender and lax,* 0.15–2 dm. long, 0.6–1.8 *cm. in diameter,* with pedicels mostly 3–12 mm. apart, with 5–40 siliques: pedicels finally loosely ascending, filiform, the lower 2–8 mm. long: *sepals oblong,* glabrous or hispid, 1.5–2 *mm. long,* 1 *mm. broad; petals white,* obovate, 2.7–3 *mm. long,* 2 *mm. broad:* anthers 0.2–0.3 mm. long: ovary glabrous: *siliques plump, compressed-ovoid, -ellipsoid or -oblong,* 2.5–10 mm. long, 1.8–3.3 mm. broad, *glabrous, with very short* (0.1–0.4 mm. long) but definite *style: seeds* 10–32, *closely imbricated and often turned oblique to the septum,* 1–1.4 mm. long.—RHODORA, vii. 67, t. 60, figs. 13–15 (1905); Ibid. xxviii. 201 (1926). *D. canadensis,* var. *pycnosperma* (Fern.) O. E. Schulz in Engler, Pflanzenr. iv^{105}. 277 (1927).—Highly localized on limestones of northwestern Newfoundland and of eastern and northern Gaspé County, Quebec. NEWFOUNDLAND: dry limestone cliffs and talus, western face of Doctor Hill, *Fernald & Long,* no. 28,369. QUEBEC: dans l'Anse-à-l'Indien, sur les calcaires, Cap Gaspé, *Victorin, Rolland, Brunel & Rousseau,* nos. 17,379, 17,380, as *D. arabisans,* var. *orthocarpa;* wet limestone cliffs, Le Coulé, Percé, August 17, 1904, *Collins, Fernald & Pease* (*Pease,* no. 5450); crest of calcareous sea-cliffs, Cap Barré, Percé, August 16–20, 1904, *Collins, Fernald & Pease* (*Pease,* nos. 7361, 7359); sommet des "Trois Soeurs," Percé, *Victorin, Rolland, Brunel & Rousseau,* no. 17,375; dry calcareous rock, summit of Mt. Ste. Anne, Percé, July 24, 1905, *Williams, Collins & Fernald;* in a cold dark cave, near permanent snow, Mt. Ste. Anne, July 24, 1905, *Williams, Collins & Fernald;* Bonaventure conglomerate



MAP 16. Range of DRABA PYCNOSPERMA.

(calcareous), summit of Mt. Ste. Anne, *Fernald & Collins,* nos. 1071, 1072; sur les faces nues du conglomérate Bonaventure, vers 350 m. d'alt., Mt. Ste.-Anne, *Victorin, Rolland, Brunel & Rousseau,* no. 17,387; dry cliffs, Mt. Ste. Anne, *Pease,* nos. 19,239, 20,242; crests of calcareous sea-cliffs, Cap Blanc, Percé, August 17, 1904, *Collins, Fernald & Pease,* TYPE collection (*Pease,* no. 5437); steep face of Cap Blanc, *Collins & Fernald,* no. 94; Bonaventure conglomerate (calcareous) sea-cliffs, Bonaventure Island, *Fernald & Collins,* nos. 1073, 1074; blocs de conglomérat, Île Bonaventure, *Victorin, Brunel & Rousseau,* nos. 17,376, 17,377; falaîse de grès, Tourelle, *Rousseau,* no. 31,150. PLATE 306; MAP 16.

In its very plump siliques with crowded and usually obliquely-imbricated seeds and in its small flowers *Draba pycnosperma* should not be confused with any other species. Although Schulz reduces it to varietal rank, as *D. canadensis,* var. *pycnosperma,* it is very evident that he has completely misunderstood *D. canadensis. D. canadensis* Brunet (PLATE 315, FIGS. 3, 4 and 6) is a rather unimportant variation of *D. arabisans* Michx., differing from typical *D. arabisans* only in having slightly broader and flatter siliques (ovate and flat rather than lanceolate and twisted). It has all the technical characters of *D. arabisans:* oblanceolate entire or sparingly toothed rosette-leaves; flowering stems merely pannose-stellate (without elongate simple and bifurcate trichomes); cauline leaves narrow, merely stellate-pinnose (not hirsute) on the surfaces and rather numerous (6–9); pedicels divergent; sepals 2.5–3 mm. long; petals 4 mm. long; fruiting racemes compact, with subapproximate fruits, subcorymbiform to short-cylindric, 1.5–5 cm. long; siliques very flat; seeds not imbricated, lying flat against the septum. In contrast *D. pycnosperma* has broader rosette-leaves, flowering stems with simple and bifurcate trichomes mixed with the stellate ones, the 1–4 round-based cauline leaves often sparsely hirsute, the pedicels more ascending and relatively shorter, the sepals and petals definitely smaller; the fruiting racemes very slender and much elongate, with fruits becoming remote, the siliques very plump (½–⅔ as thick as broad), the crowded or imbricated seeds usually turned oblique to the rachis. The reasons for Schulz's reduction of *D. pycnosperma* to *D. canadensis* were, obviously, his unfamiliarity with the latter plant, coupled with his reliance solely upon the inconstant outline of the silique:

> *Siliculae acutae, raro acuminatae.
> †Semina 1–1,2 mm longa. Siliculae acutae.
> . . . .
> . . . .
> ††Semina vix 1 mm longa. Siliculae acuminatae. . . .205. *D. arabisans.*

**Siliculae obtusiusculae vel rotundatae.

....

††Siliculae parvae, 2,5–7 mm longae, ovoideae, apice rotundatae.................................208. *D. canadensis.*

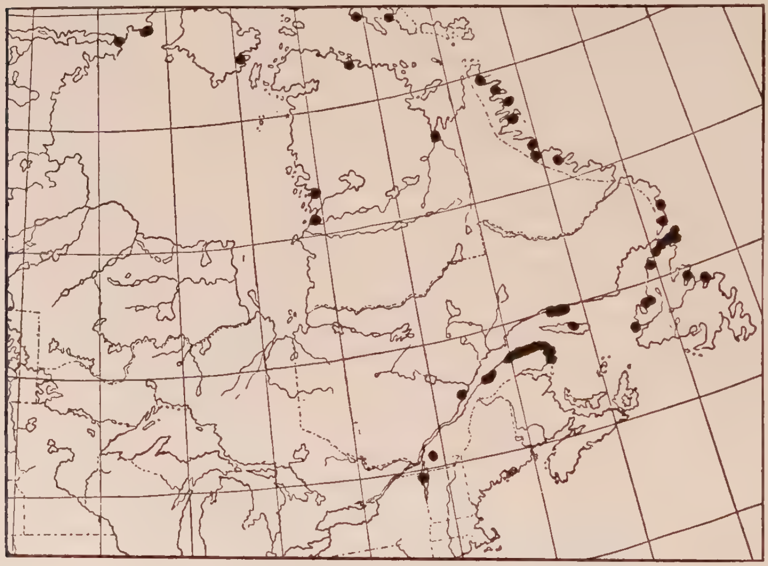
It will be noted that by ascribing to *D. canadensis* in his key "ovoid" (rather than flat and ovate) siliques Schulz was giving it a fundamental character of *D. pycnosperma.* Incidentally, Schulz made it clear that he did not personally know *D. canadensis,* his diagnosis of it, between quotation marks, being a latinization of the brief varietal description of *D. arabisans,* var. *canadensis* published by Knowlton and myself, with the siliques correctly described "Siliculae . . . elliptico-ovatae"; whereas *D. pycnosperma,* of which I had sent duplicates to Berlin, was accurately described: "Racemus . . . fructifer elongatus, laxus. Siliculae . . . . ovoideae, . . . valvis convexis subinflatae . . . . . Semina . . . densissime conferta."

Draba pycnosperma, known only from the region of Cape Gaspé and Percé, at the tip of the Gaspé Peninsula, where it is a very common and definite species, and from a single cliff-wall farther west and a single wall of the Doctor Hills of northwestern Newfoundland, has the peculiarly restricted relic-localization which characterizes most of the endemics of the region. In many cases, however, the endemics of the shores of the Gulf of St. Lawrence are found over extensive areas of either Gaspé, Anticosti, the Mingan Islands or western Newfoundland and also on one or another of the other areas (sometimes also the Magdalen Islands or St. Paul Island): such plants as *Draba laurentiana* (of western Newfoundland, the Côte Nord, the Mingan Islands and, perhaps, Anticosti), *Amelanchier Fernaldii* Wieg. (of western Newfoundland, Gaspé, the Magdalen Islands and St. Paul Island), *Primula laurentiana* Fern. (of Newfoundland, southern Labrador, the Mingan Islands, Anticosti, Gaspé and adjacent areas and the Magdalen Islands, with outlying colonies westward in Quebec and southward in Nova Scotia and Maine) and *Gentiana nesophila* Holm (of western Newfoundland, the Mingan Islands and Anticosti). But *D. pycnosperma,* although dominant at the extreme eastern end of the Gaspé Peninsula (Percé region, Bonaventure Island and Cape Gaspé), is otherwise known on the Gaspé Peninsula only from a single station more than 100 miles to the west; it is quite unknown from Anticosti and the Mingan Islands; and in Newfoundland it has been found only on a single cliff.

16. D. GLABELLA Pursh. Loosely to densely cespitose *perennial,* forming mats 0.2–2 dm. across: the pale slender mostly forking caudices retaining shreds of dead leaves, ending in depressed rosettes 1.5–8 dm. across: *rosette-leaves* cuneate-oblanceolate, oblanceolate-oblong or spatulate, dentate to entire, attenuate to the petiolar base, 0.7–4.5 cm. long, 2–10 mm. broad, *closely stellate-pannose,* in age sometimes glabrate: *flowering stems* simple to freely forking, 0.5–4 dm. high, *stellate-pannose,* only rarely with a few simple spreading trichomes, often glabrate at summit: *cauline leaves* 1 (rarely 0)–14, *ovate to oblong, tapering to rounded or subamplexicaul at base,* 1–3(–5)-dentate on each side or sometimes entire, 0.8–4 cm. long, 2–12 mm. wide, more or less stellate-pilose or glabrate: *racemes* corymbiform in flower, in fruit elongate, *usually lax,* the principal ones 0.3–1.5 dm. long with 5–35 subdistant siliques: *pedicels finally ascending, stoutish* (rarely very slender), *the lowest* 1–6 (rarely –8 or even 10) *mm. long: sepals* oblong, pilose to glabrous, 2–3 *mm. long,* 1–2 *mm. broad,* white-margined: *petals white,* broadly obcordate, unguiculate, 3–5.5 *mm. long,* 2–4 *mm. broad:* anthers about 0.4 mm. long: *siliques glabrous or more or less hirtellous* with stellate and bifurcate trichomes, *narrowly lanceolate to ovate-oblong,* 6–13 mm. long, 1.5–4 mm. broad, *with obsolete to short* (up to 0.5 mm. long) and *thick style,* compressed, *flattish,* rarely twisted, *the valves definitely veiny:* seeds 18–38, oblong to rounded, 0.7–1.3 mm. long.—A highly variable circumpolar species, represented in our area by four geographic varieties:

a. Siliques narrowly to broadly lanceolate, acute or subacute, 1.5–3 mm. wide: seeds 0.7–1 mm. long.
  Cauline leaves 1 (rarely 0)–5: longer racemes mostly with 5–15 (rarely –20) siliques............................Var. *typica.*
  Cauline leaves 5–8: longer racemes mostly with 10–35 siliques.......................................Var. *orthocarpa.*
a. Siliques elliptic to oblong-ovate, obtuse, 2.5–5 mm. wide: seeds 1–1.3 mm. long.
  Cauline leaves 1–4: plant of Greenland, Baffin Land and Hudson Strait...............................Var. *brachycarpa.*
  Cauline leaves 5–14: plant of Newfoundland, southeastern Quebec and eastern New Brunswick.......Var. *megasperma.*

Var. **typica.** *D. glabella* Pursh, Fl. Am. Sept. ii. 434 (1814); DC. Syst. ii. 355 (1821) and Prodr. i. 172 (1824); O. E. Schulz in Engler, Pflanzenr. iv^{105}. 275 (1927), in part only. *D. hirta* of Authors generally, not L. (1759), acc. to Elis. Ekman, Kgl. Svenska Vet.-Akad. Handl. lvii^{3}. 13 (1917) and Svensk Bot. Tidskr. xxiv. 281 (1930); Reichenb. Ic. Pl. Crit. viii. t. dcclxviii (1830); Sv. Bot. xi. t. 768, fig. 1 (1838), very characteristic; O. E. Schulz, l. c. 267, in large part, incl. fig. 29, A–J (1927). *A. daurica* DC. Syst. ii. 350 (1821) and Prodr. i. 170 (1824); O. E. Schulz, l. c. 274, at least in part (1927); Elis. Ekm. Svensk Bot. Tidskr. xxiv. 285, t. iii. figs. 1–6 (1930). *D. Henneana* Schlechtend. Linnaea, x. 100 (1836); O. E. Schulz, l. c. 276 (1927), in part, excl. at least the synonyms *D. incana,* var. *arabisans* Wats., *D. Longii* Schweinitz, *D. McCallae* Rydb. and *D. stylaris* Fern. & Knowlt. *D. dahurica* Fisch. ex Turcz. Bull. Soc. Nat. Mosc. (1838) No. 1: 87 (alteration of name). *D. magellanica* Lam., subsp. *borea* Elis. Ekm. Kungl. Svenska Vet.-Akad. Handl. lvii³: 44 (1917), in part (excl. at least the syn. *D. arabisans* Michx.). *D. hirta borea* (Elis. Ekm.) Ostenf. acc. to Ekm. in Hultén, Fl. Kamtch. ii. 161—Kungl. Svenska Vet.-Akad. Handl. ser. 3, v². 161 (1928) as synonym.—Of wide range in the Arctic and Subarctic, extending south with us to Newfoundland, Quebec, Lake Champlain, New York, and shores of Hudson Bay. The following are characteristic. LABRADOR: on granitic rock, old sea-beaches, Northwest Bank at Head of Ryan's Bay, *Woodworth*, no. 240½; Valley of the Twin Falls, Cape Mugford Peninsula, *Abbe*, no. 371; Okkak, *Moravian Bros.*, *Sornborger*, no. 173 in part; Port Manvers, *Gardner*, no. 317a; Anatolak, *C. S. Sewall*, no. 519; gravelly moraine, Mouth of Frazer River (near Nain), *Harlow Bishop*, no. 325; Nain, *Henne*, TYPE of *D. Henneana* Schlechtend. in Herb. Mus. Bot. Berol. (see PLATE 308, FIG. 2); Hopedale, *Gesner;* rocks at base of cliff, Dead Islands, *J. A. Allen*, no. 25; rocky hillsides, Battle Harbor, *Harlow Bishop*, no. 326. NEWFOUNDLAND: conglomerate-rock crests and crevices, shore of Dildo Run, New World Island, Notre Dame Bay, *Fernald, Wiegand & Bartram*, no. 5457; rocks, shores of Pike's Arm, *Fernald, Wiegand & Bartram*, no. 5458a; near seaward edge of Fishing Head, St. Anthony, *Abbe &*

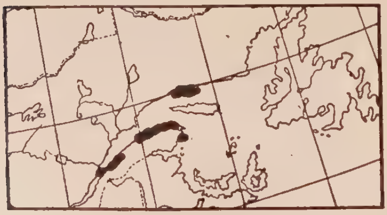


MAP 17. Range in eastern America of DRABA GLABELLA (TYPICA).

Brooks, nos. 364, 365, 367; peaty and turfy brookside, Quirpon Island, *Fernald & Long*, no. 28,370; brookside on slaty hills back of Little Quirpon, *Fernald & Gilbert*, no. 28,365, as *D. megasperma:* slaty talus of Noddy Point, Mauve (or Noddy) Bay, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 28,356; dry trap cliffs south of Ship Cove, Sacred Bay, *Fernald, Wiegand & Long*, no. 28,406, in part (mixed with *D. norvegica*); open peaty and gravelly spots on crests of trap cliffs, Cape Onion, *Fernald & Long*, no. 28,403; turfy or gravelly shelves, crests or talus of diorite, Ha-Ha Mountain, Ha-Ha Bay, *Pease & Griscom*, no. 28,379; gravelly limestone barrens near the sea, Eddy's (or Old Man's) Cove, *Fernald, Long & Fogg*, no. 1748½, transition to var. *megasperma;* dry gravelly limestone barrens, Eastern Point, St. John Bay, *Fernald, Long & Fogg*, no. 1737, transition to var. *megasperma;* limestone cliffs near Stanleyville, Bonne Bay, *Fernald, Long & Fogg*, no. 1751; high sea-cliffs, Chimney Cove, *Waghorne*, no. 19, as *Arabis hirsuta;* dry limestone barrens, local, Green Gardens, Cape St. George, *Mackenzie & Griscom*, no. 11,079. QUEBEC: limestone sea-cliffs, Île au Marteau (Eskimo I.), Mingan Islands, *St. John*, no. 90,476; sur les rochers calcaires, Île Ste.-Généviève, Mingan, *Victorin & Rolland*, no. 18,353; cailloutis calcaire du côté du large, Île Ste.-Généviève, Mingan, *Victorin & Rolland*, no. 21,471, as *D. megasperma;* sur les graviers et le cailloutis calcaires à l'embouchure, Rivière Vaureal, Anticosti, *Victorin, Rolland & Louis-Marie*, no. 21,474; cliff-shores of Gaspé Bay, Douglastown, August 22, 1904, *Collins, Fernald & Pease* (*Pease*, nos. 7350, 7353), as *D. arabisans*, var. *orthocarpa;* Les Murailles, Percé, August 17, 1904, *Collins, Fernald & Pease* (*Pease*, nos. 7357, 7358), as *D. arabisans*, var. *orthocarpa;* cold cliff, at 550 feet, Grande Coupe, Percé, August 19, 1904, *Collins, Fernald & Pease;* shaded calcareous cliffs of Little River, west of Percé, August 16, 1904, *Collins, Fernald & Pease* (*Pease*, no. 5094), as *D. arabisans*, var. *orthocarpa;* schistes nus, La Madeleine, *Rousseau*, no. 31,072; talus slope east of Rivière à Claude, *Kelsey & Jordan*, no. 65, as *D. arabisans*, var. *orthocarpa;* falaises escarpées et humides, Marsouins, *Victorin, Rolland & Jacques*, no. 33,676, as *D. arabisans*, var. *orthocarpa;* summit of talus and bases of calcareous cliffs west of Rivière aux Marsouins, *Fernald & Weatherby*, no. 2448; cliffs near Cap au Renard, *Pease*, no. 19,227; calcareous sea-cliffs and rock-slides by the Gulf of St. Lawrence, Christie, *Fernald & Pease*, no. 25,095; shaded cliffs, Cap Tourelle, August 19–21, 1905, *Collins & Fernald*, as *D. arabisans*, var. *orthocarpa;* calcareous headlands by the St. Lawrence, Grosses Roches, *Fernald & Pease*, no. 25,093; limestone and limestone-conglomerate ridges from Pointe aux Corbeaux to Cap Caribou, Bic, *Fernald & Collins*, nos. 1076, 1076^a; sur le conglomérat nu, Cap aux Corbeaux, Bic, *Rousseau*, no. 26,442; près du Cap Enragé, Bic, *Victorin*, no. 9587; sur le conglomérat nu, Cap Enragé, *Rousseau*, nos. 26,503, 26,508, as *D. arabisans*, var. *orthocarpa;* mouth of Murray R., *Robt. Campbell* in Herb.

Geol. Surv. Can., no. 66,722, as *D. arabisans,* var. *orthocarpa;* Mt. St. Hilaire, Rouville Co., *Victorin,* no. 1052, as *D. arabisans.* NEW YORK: on limestone, Garden Island, Lake Champlain, near Valcour, July, 1892, *Brainerd.* UNGAVA: Ungava Bay, *L. M. Turner,* nos. 4842, 6316; Wakeham Bay, Hudson Strait, *Malte,* nos. 120,203, 120,209; "In Hudson's Bay. ⊙. *v. s.* in Herb. Banks," Pursh, l. c., TYPE of *D. glabella* at Brit. Mus. (see PLATE 308, FIG. 1); Richmond Gulf, *Spreadborough,* no. 16,272, *Low,* no. 63,144; Great Whale River, Hudson Bay, *Low,* no. 63,143. KEEWATIN: Fullerton, *J. M. Macoun,* no. 79,066, as *D. hirta,* var. *lejocarpa* Lindbl.; Chesterfield Inlet, *Gardner,* no. 377. Extending w. to Alaska. PLATES 307, 308; MAP 17.

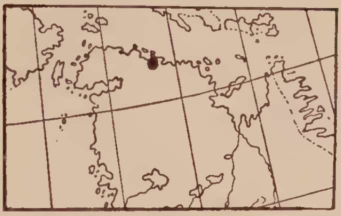
Var. **orthocarpa** (Fern. & Knowlt.), comb. nov. *D. arabisans,* var. *orthocarpa* Fern. & Knowlt. RHODORA, vii. 66, in part only, but as to cited type, t. 60, fig. 11 (1905); O. E. Schulz, l. c. 276 (1927).—Quite like var. *typica* but more leafy, the cauline leaves 5–8, and with fuller racemes (siliques of well developed racemes 10–35).—Quebec and Keewatin. QUEBEC: rocky limestone headland, Pointe-aux-Esquimaux, Mingan, *St. John,* no. 90,485, transitional to var. *typica;* sur les corniches calcaires, Grande Île, Mingan, *Victorin & Rolland,* no. 21,469; cold rocks by permanent snow, Mt. Ste. Anne, Percé, July 24, 1905, *Williams, Collins & Fernald;* schistes, Chloridorme, *Rousseau,* no. 31,223; ledges near Pte. du Gros Mâle, *Pease,* no. 20,159; at base of calcareous slaty cliffs and talus, Cap Pleureuse, *Fernald & Weatherby,* no. 2447; dry calcareous cliffs, Cap Tourelle, *Fernald & Pease,* no. 25,094 in part (mixed with var. *typica*); calcareous cliffs, west of Méchins, *Fernald & Collins,* no. 582; low headland near the wharf (the old wharf), Bic, July 15–18, 1904, *Collins & Fernald,* TYPE of the var.; limestone and limestone-conglomerate ridges from Pointe aux Corbeaux to Cap Caribou, Bic, *Fernald & Collins,* no. 1212; rocher, Bic, *Rousseau,* nos. 24,831, 26,353, 26,389 and 26,548; island-headland north of Cap au Massacre, Bic, July 16, 1904, *Collins & Fernald;* rocky banks (conglomerate), Trois-Pistoles, *Victorin,* no. 30; rocks near the shore, L'Islet, *Victorin,* no. 3203; Îles Pelerins (Le Gros), Temiscouata Co., *Victorin,* no. 573. KEEWATIN: Churchill, *J. M. Macoun,* nos. 79,065, 79,068. PLATE 309; MAP 18.

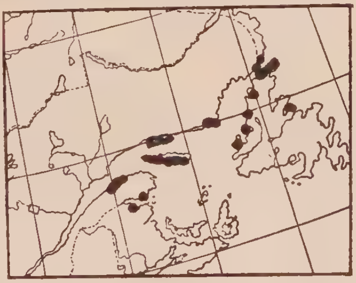

MAP 18. Range of DRABA GLABELLA, var. ORTHOCARPA.

Var. **brachycarpa** (Rupr.), comb. nov. *D. hirta,* var. *brachycarpa* Rupr. Fl. Samojed. Cisural. in Beitr. Pflanzenk. Russ. Reiches, Lief. 2: 22 (1845); O. E. Schulz, l. c. 271 (1927).—A marked extreme of northernmost Russia and Siberia, Greenland, Baffin Island and the

Hudson Strait region. UNGAVA: Wakeham Bay, Hudson Strait, *Malte*, nos. 118,919, 120,198, 120,243. PLATE 310; MAP 19.

Var. **megasperma** (Fern. & Knowlt.), comb. nov. *D. megasperma* Fern. & Knowlt. RHODORA, vii. 65, t. 60, figs. 6–8 (1905); O. E. Schulz, l. c. 277 (1927), excluding var. *leiocarpa* O. E. Schulz, l. c. which is a form of *D. arabisans*.—Southern Labrador, Newfoundland, eastern Quebec and northeastern New Brunswick. LABRADOR: cliffs by waterfall near shore, Forteau, *Fernald, Wiegand & Kittredge*, no. 3457. NEWFOUNDLAND: rocks, shores of Pike's Arm, *Fernald, Wiegand & Bartram*, no. 5458; damp peaty tundra, Schooner (or Brandy) Island, Pistolet Bay, *Pease & Long*, no. 28,362; damp turfy hollows in limestone barrens, Cape Norman, *Wiegand, Griscom & Hotchkiss*, no. 28,361; springy swales and turfy shores, Boat Harbor, Straits of Belle Isle, *Fernald, Wiegand & Long*, no. 28,263; turfy slope near mouth of Big Brook, Straits of Belle Isle, *Fernald & Long*, no. 28,358; dry limestone cliffs and talus, western face of Doctor Hill, *Fernald & Long*, no. 28,371, transition to var. *typica* (distrib. as *D. hirta*); conglomerate limestone and calcareous sandstone cliffs and ledges, Cow Head, *Fernald & Wiegand*, no. 3456, as *D. hirta;* shelves and talus of diorite cliffs, Western Head, Bonne Bay, *Fernald, Long & Fogg*, no. 1752, transition to var. *typica* (distrib. as *D. hirta*); banks, Rope Cove, *Waghorne*, no. 14, as *D. incana.* QUEBEC: upper slopes and crests, calcareous tableland, east of Blanc Sablon ("Labrador"), *Fernald & Wiegand*, no. 3458; rock-crests, Vieille Romaine, Archipel Ouapitagone, *St. John*, no. 90,484, as *D. arabisans*, var. *orthocarpa;* Wolf Bay, long. 60° 13′, *Abbe*, no. 1261; top of limestone shingle, Île Ste.-Généviève, Mingan, *St. John*, no. 90,475; sur les graviers calcaires, Île Ste.-Généviève, *Victorin & Rolland*, nos. 18,245, 21,476 and 24,861 (as *D. arabisans*); rivages, Île à la Chasse, Mingan, *Victorin & Rolland*, no. 24,867; sur les rochers calcaires, Île St.-Charles, Mingan, *Victorin & Rolland*, no. 18,254, 18,255; sur les corniches calcaires, Île Tête à la Baleine, Mingan, *Victorin & Rolland*, nos. 21,466, 21,472; sur les cailloutis calcaires, Île à la Vache Marine, Mingan, *Victorin & Rolland*, no. 18,257; lieux herbeux sur un îlôt


MAP 19. Southeastern Extension in America of Draba GLABELLA, var. BRACHYCARPA.


MAP 20. Range of DRABA GLABELLA, var. MEGASPERMA.

d'oiseaux, Île Nue, Mingan, *Victorin & Rolland*, no. 24,866 (very lax state); sur les déserts caillouteux du côté ouest, Île Nue, *Victorin & Rolland*, no. 24,869 (dwarfed state); prairie naturelle, Île aux Calculeaux, Mingan, *Victorin & Rolland*, no. 21,478; rivages calcaires, Île à Marteau, Mingan, *Victorin & Rolland*, no. 24,862 (as *D. arabisans*); sur les graviers calcaires, Grande Île, Mingan, *Victorin & Rolland*, no. 21,481 (transition to var. *orthocarpa*); sur les graviers du Barachois, Lac à la Croix, Anticosti, *Victorin & Rolland*, no. 27,312; sur les graviers du Barachois, Rivière Dauphine, Anticosti, *Victorin & Rolland*, no. 27,313; sur les bords d'alluvion de la Rivière Belle, Anticosti, *Victorin & Rolland*, no. 27,314; sur le Barachois, Crique de la Chaloupe, Anticosti, *Victorin & Rolland*, no. 24,865; low islands near Becsies River, Anticosti, *Victorin*, no. 3140 (as *D. arabisans*); Anse au Sanatorium, Anticosti, *Victorin*, no. 4134 (as *D. arabisans*); rocks near the sea-shore, Tourelle, July 13, 1881, *J. A. Allen;* sea-cliffs east of Ste. Anne des Monts, Tourelle, *Griscom, Mackenzie & Smith*, no. 25,770; grès denudés, Tourelle, *Rousseau*, no. 31,151; dry sandstone sea-cliffs, Capucins, *Fernald & Collins*, no. 583; limestone-conglomerate boulders in woods, Gros Crépaud, *Fernald & Collins*, no. 580; gravelly beach at Paspébiac Lighthouse, July 26, 1902, *Williams & Fernald* (TYPE of *D. megasperma*); dry gravel-beach, Paspébiac, *Collins & Fernald*, no. 91, July 27, 1902, *Churchill;* same station, *Victorin, Rolland & Jacques*, no. 33,774. NEW BRUNSWICK: dry gravel-pavement back of the beach, Belledune Point, *Fernald & Pease*, no. 25,092; near Bathurst (probably the preceding station), July, 1881, *C. Linden*. PLATES 311, 312; MAP 20.

Draba glabella is the most variable of our species, embracing not only much of the *D. hirta* of authors but many variations which have sometimes been given specific rank and scores of proposed subspecies, varieties and forms. As to the Linnean *D. hirta*, Mrs. Ekman has clearly shown that the primary type was material of the plant subsequently described as *Braya alpina* Sternb. & Hoppe.[1] Consequently, the next available name must be taken up. Mrs. Ekman at first united the boreal plant with the subantarctic *D. magellanica* Lam., but afterward withdrew it in large part and treated it, apparently correctly, as *D. daurica* DC. (1821). She made the mistake, however, of uniting with it *D. arabisans* Michx. (PLATES 314, 315), and she suspected, what, unfortunately she did not follow up, that *D. daurica* (1821) was inseparable from *D. glabella* Pursh (1814): "Die *D. glabella* müsste wohl ihrem Namen gemäss der leiocarpen

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[1] This Old World species should, of course, be called BRAYA **hirta** (L.), comb. nov. *Draba hirta* L. Syst. Nat. ed. 10, ii. 1127 (1759) and Sp. Pl. ed. 2, ii. 897 (1763). *B. alpina* Sternb. & Hoppe, Denkschr. Regensb. i^1. 66 (1815).

For detailed exposition of the typification see Elis. Ekman, Kgl. Svenska Vet. Akad.-Handl. lvii.^{3} 13 (1917) and Svensk Bot. Tidskr. xxiv. 281 (1930).

Unterart, subsp. *borea* [of *D. magellanica*], entsprechen" (Ekm., Kungl. Sv. Vet.-Akad. Handl. lvii^3. 49); "I have not seen the type of *D. glabella* Pursh which is derived from Arctic America, but it would not surprise me if this plant were identical with a glabrous form of *D. daurica*" (Ekm. Svensk Bot. Tidskr. xxiv. 287).

The latter surmise of Mrs. Ekman was correct. Pursh explicitly stated that his type of *Draba glabella* was in the Banks Herbarium (at the British Museum). A photograph (PLATE 308, FIG. 1) of this type, most generously supplied by Mr. J. Ramsbottom, with a detailed description of it by Mr. A. W. Exell, settles that point; and, so far as I can find, *D. glabella* Pursh is the earliest name for the variable circumpolar "*D. hirta*." The name given by Pursh, *D. glabella*, was misleading in its connotation, so much so that practically all students, refraining from an examination of the readily accessible type, have quite misinterpreted it. Thus Hooker, who probably knew the original material and who correctly described it, made a comparison of the leafy-stemmed and comparatively large *D. glabella* with the scapose and pygmy *D. crassifolia* (PLATE 294) which threw later students off guard: "This has more the habit of *D. crassifolia* than of the following [the excessively leafy and villous *D. confusa*]; but it is three or four times the size, and has flowers as large as any in the genus."[1]

Hooker's comparison of *Draba glabella* with the really very different *D. crassifolia* was repeated by Torrey & Gray and its reiteration by others has tended further to obscure the true identity of Pursh's species. As a matter of fact, the specific name used by Pursh should be taken in the sense he presumably meant it and with appreciation of the almost microscopic character of the trichomes in his species. He enumerated three species with leafy stems: the very distinct *D. arabisans* Michx., *D. incana* L., described "D. foliis caulinis numerosis incanis, pilis implexis," and the much less obviously pubescent new species, *D. glabella* "foliis . . . glabriusculis." As compared with the villous *D. incana*, *D. glabella* has, to use Daydon-Jackson's definition, SOMEWHAT GLABROUS (*glabriusculus*) leaves. Mr. Exell's close examination of the type material, however, results in the following diagnosis: rosette-leaves stellate-pubescent; stem and cauline leaves with stellate and very short forked trichomes; pedicels mostly stellate-pubescent; siliques stellate-pubescent. In other words, instead of being essentially glabrous, the type of *D. glabella* is stellate-pubescent throughout under a lens! Had he understood *D. glabella,* Schulz would hardly have treated it as a species wholly apart from "*D. hirta,*" *D. daurica, D. Henneana* and *D. megasperma.* In his key (his pp. 204 and 205) he places *D. hirta, D. daurica* and *D. glabella* under a section "*Siliculae acutae, raro acuminatae," while *D. Henneana* and *D. megasperma* are set off from them by "**Siliculae obtusiusculae vel rotundatae," although in the fuller treatment (p. 275) this key-differentiation becomes confused by the "acute"-fruited *D. glabella* being assigned "Siliculae oblongo-ellipsoideae, apice obtusiusculo." "*D. hirta*" is correctly assigned, in the key, "Caules et folia pube stellata minuta obtecta," while *D. glabella,* the type (PLATE 308, FIG. 1) of which is also stellate-pubescent throughout, is separated merely by "Caules et folia glabrescentia," a difference which would be wholly unimportant even if it were so.

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[1] Hook. Fl. Bor.-Am. i. 54 (1830).

As to *Draba daurica* DC., which Schulz separates from "*D. hirta*" in his key because it has "Folia caulina superiora basin versus manifeste cuneatim angustata," while "*D. hirta*" was placed under the leading division "Folia caulina superiora basin versus dilatata vel vix cuneata," it is apparent from the type of *D. daurica* (PLATE 308, FIG. 3) that Schulz could not have taken the trouble to check that important specimen at Geneva. The type, for the photograph of which I am greatly indebted to Dr. Alfred Becherer and Mr. J. F. Macbride, clearly shows the uppermost leaf "basin versus dilatata," the character ascribed by Schulz to *D. hirta.* The type thus agrees with DeCandolle's original description of *D. daurica,* "Folia . . . caulina pauca, ovata, subacuta," and not very satisfactorily with Schulz's key-character for *D. daurica:* "basin versus manifeste cuneatim angustata." Incidentally, the type of *D. daurica* has the young siliques lance-acuminate, a character not sharply brought out by the "Siliculae . . . oblongae" of Schulz's diagnosis. In his detailed diagnosis DeCandolle said "Caulis . . . pilis simplicibus basi confertioribus apice raris subpuberulus" and Mr. Macbride independently writes that the leaves have unequally forked stellate trichomes and that the leaf-margins and the stems (below densely, above very sparsely) are pubescent with long simple and once-forked weak hairs interspersed, at least below, with unequally stellate trichomes like those of the leaves. In their relative abundance on the base of the stem *D. daurica* somewhat departs from the typical eastern American *D. glabella.* It seems, however, to be one of the variants of that species.

Draba Henneana Schlechtendal was based on a plant collected at Nain, Labrador by the Moravian missionary, Henne. It was given the very detailed and wholly accurate description which characterized the work of Schlechtendal and distinguished him as one of the really great German phytographers. In his account of the type of *D. Henneana,* Schlechtendal described the young fruits: "siliculis pedicello suo longioribus anguste ellipticis brevissimo stylo apiculatis et ut omnes reliquae partes plantae pilis stellatis simplicibusque obsessis." The type specimen of *D. Henneana* (PLATE 308, FIG. 2), now unfortunately much broken, has most liberally been sent to me from Berlin by Dr. Milbraed. So far as I can see it is inseparable from the pubescent-fruited individuals of "*D. hirta,*" from the common run of Labradorean *D. glabella* (the type of which is also stellate throughout) and from *D. daurica.* Although the type of the latter has quite glabrous ovaries, while those of the types of *D. glabella* and of *D. Henneana* are pubescent, this character alone is so very fickle in the species that I am inclined to ignore it. The siliques throughout the series of North American varieties range from quite glabrous, through an intermediate series with scabrous or hirtellous surfaces, to a few which are more positively stellate-hirsute. There seems to be no geographic nor taxonomic significance to the character in this particular species.

For some reason, which I am wholly at a loss to explain, Schulz segregates from his true *Draba Henneana* (originally described by Schlechtendal "siliculis . . . pilis stellatis simplicibusque obsessis") the individuals with pubescent siliques as a separate

Var. **McCallae** (Rydberg) O. E. Schulz [spelled by Schulz Mac Callae]—*D. McCallae* Rydberg in Bull. Torrey Bot. Club XXIX. (1902) 241. *D. stylaris* Fernald and Knowlton in Rhodora VII. 76. (1905) 64, pro parte, non Gay.—Siliculae pilis brevibus simplicibus bifurcis intermixtis obsitae.

As conceived by Schulz, therefore, his var. *McCallae* differs from true *D. Henneana,* accurately described by Schlechtendal "siliculis . . . pilis stellatis simplicibusque obsessis," by having the almost identical character: "Siliculae pilis brevibus simplicibus bifurcis intermixtis obsitae." Further to elucidate his understanding of the matter, Schulz, under his glabrous-fruited *D. Henneana* cited the single type specimen as belonging to both!: "Nain (Missinar Henne, auch var. *Mac Callae*)"! Although the description and at least the

Labrador specimens cited by Schulz as showing his conception of his *Draba Henneana*, var. *McCallae* belong to typical *D. Henneana*, therefore to *D. "hirta,"* to *D. daurica* and to *D. glabella*, they have no close relationship to *D. McCallae* Rydb. The latter species is a very clear-cut plant of the northern Rocky Mountains. The type of it (PLATE 313, FIGS. 1 and 5), which Dr. Gleason has most kindly allowed me to have photographed, has very softly pilose stems, with few if any of the sessile or subsessile stellate trichomes which so closely cover the surface in *D. glabella* (including *Henneana*); instead, the lower internodes (PLATE 313, FIG. 4) are copiously pilose to villous with long and soft spreading or retrorse simple hairs. The leaves (FIG. 3), too, have a sparser but longer and mostly simpler (or merely bifurcate) pubescence than in *D. glabella*. The flowering raceme is promptly, instead of tardily, elongate, and in full maturity (as shown by ripe fruiting plants, FIG. 2) it is ⅔ the full length of the stem (much as in *D. aurea*), with very slender and elongate pedicels. The siliques (FIG. 6), both in the type and in ripe material of *D. McCallae*, are oblique or semilunate and covered with more spreading pubescence than in *D. glabella*. *D. McCallae*, in the abundant spreading and mostly simple pubescence of the siliques and in its elongating flowering raceme, is very near the Asiatic *D. dasycarpa* C. A. Meyer, so beautifully shown in Ledeb. Icon. Pl. Fl. Ross. iii. t. 264 (1831). Its identification with *D. Henneana*, the type of which is "also var. *MacCallae* (auch var. *MacCallae*)" could have resulted only from complete misunderstanding of it.

As to the citation under Schulz's var. *McCallae* of "*D. stylaris* Fernald and Knowlton . . . pro parte," this was apparently due to the inclusion, erroneously, by Knowlton and myself of the synonym *D. Henneana*, about which we then knew nothing but the description, under *D. stylaris*. One or two other synonyms of *D. Henneana* given by Schulz demand a word of clarification. Under his typical *D. Henneana* he includes in the synonymy *D. arabisans* Michx., β. Torr. & Gray, Fl. N. Am. i. 106 (1838) and *D. Longii* Schwein. ex Torr. & Gr. l. c. as syn. Without entering now into specifications, it should be noted that the original sheet in the Torrey Herbarium of *D. arabisans*, β. T. & G. (based on the manuscript *D. Longii*) bears very detailed notes by Torrey and is a characteristic Great Lake form of *D. arabisans*, just as Torrey & Gray correctly decided. It does not belong to *D. glabella* (including *D. Henneana*).

As to numerous other synonyms placed by various authors under *Draba* "*hirta*," *D. glabella, D. daurica* and *D. Henneana,* I am not situated to judge correctly of their status. The unwisdon of guessing at the identities of Drabas (or any other plants) by descriptions alone should be evident. The failure to recognize this elementary principle of sound taxonomic and nomenclatural study has been sufficiently emphasized in the preceding discussion. Without knowing from actual study of the types or of undoubted authentic specimens, I must pass by varietal names which, ultimately, may have to replace some which I am here using. With the exception of one (var. *brachycarpa*), the names used under *D. glabella* have been verified by examination of the taxonomic and nomenclatural types.

As already stated, the occurrence of slight pubescence on or its absence from the siliques in the wide-ranging *D. glabella* does not seem to me sufficiently constant to be used in breaking the species into its geographic varieties. The four marked trends which I have recognized in eastern America pass more or less into one another but they have their own primary centers of distribution and seem to be fairly definite geographic varieties. Var. *typica* (PLATES 307, 308), with few cauline leaves, acute or acutish, lanceolate siliques and relatively small seeds, is generally dispersed around the North and extends southward into the area of two of the varieties.

In the region of the Lower St. Lawrence and the Gulf and to some extent in the Hudson Bay area there occurs a more leafy extreme (cauline leaves up to 8) which, when well developed, has more numerous flowers and fruits than the more boreal type. This is var. *orthocarpa* (PLATE 309). When it was first published as *D. arabisans,* var. *orthocarpa* Fern. & Knowlt. our understanding of *Draba* was most rudimentary. Some of the cited specimens belong to *D. arabisans* as I now conceive it, others were very typical *D. glabella* and a few, including the TYPE-specimen (PLATE 309), were of the leafier variation of *D. glabella.* It becomes necessary, therefore, to recast the very confused conception which was originally expressed by *D. arabisans,* var. *orthocarpa.*

Var. *brachycarpa* (PLATE 310) barely reaches our area. The eastern American material I have seen is abundant specimens from Greenland, a few from Baffin Island and one collection from northern Ungava. I have seen no authentic material identified by Ruprecht, but his description was so good that I have followed Schulz in placing in var. *brachycarpa* the broad-fruited Greenland plants.

Var. *megasperma* (PLATES 311, 312), although originally put out as a species and so maintained by Schulz, clearly passes into var. *orthocarpa* and in fruit alone is scarcely separable from the more boreal var. *brachycarpa*. It differs from the latter in its greater size and more numerous leaves and is, doubtless, a Newfoundland and Gulf of St. Lawrence representative of the Greenland plant. Closely simulating var. *megasperma* but even more leafy is the newly proposed *D. laurentiana* (PLATES 304, 305). This plant, localized in much the same area as var. *megasperma*, differs from it, not only in its greater leafiness but in the abundant simple spreading pubescence of the lower internodes. Eventually it may seem right to treat it as another extreme variety of *D. glabella*. If, however, we abandon the character of pubescence in the classification of *Draba*, the whole structure must collapse. This dependence on the character of the trichomes is one of the least insecure reliances in the group; and, for the present, I am hopefully clinging to it!

One more name must be noted. This is *Draba megasperma*, var. *leiocarpa* O. E. Schulz, l. c. 277, based on *Collins & Fernald*, no. 93, from Bic, Quebec (PLATE 315, FIGS. 1 and 5). This material was originally included in the mixed *D. arabisans*, var. *orthocarpa*, but it differs from the cited type (PLATE 309) in actually having all the significant characters of *D. arabisans* with plane siliques: the long pedicels, long style and the smooth (not veiny) surfaces of the very thin and acute siliques. It does not belong with *D. megasperma* (PLATES 311, 312), which has the obtuse siliques much broader, on shorter and thicker pedicels and with nearly obsolete style, the less flattened siliques with veiny or rugose surfaces.

(*To be continued*)

NOTES ON THE FLORA OF TENNESSEE: DIOSCOREA

W. A. Anderson

From the time of publication of Gray's Manual, first edition, until the appearance of Bartlett's revision[1] of *Dioscorea* in 1910 all the native yams of the eastern United States were grouped under one species, *D. villosa* L. Bartlett recognized five species of which three are of interest in a study of the Tennessee flora. The other two, which he described as new, are restricted to the southeastern coastal States.

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[1] Bartlett, H. H., The Source of the Drug Dioscorea, with a Consideration of the Dioscoreaceae found in the United States. Bureau of Plant Industry, Bull. no. 189 (1910).

Bartlett quite properly separated the widely dispersed northern species from the Alleghanian species. Unfortunately, however, he rejected the name *D. villosa* and applied *D. paniculata* to the northern species, while he recognized two species in the Appalachian region where there is probably only one. These two are described as alike in having verticillate leaves and in having much larger fruits than the widespread northern plant. According to Bartlett there is a form restricted to the mountains which has coarse, knotted, much-branched, rootstocks and leaves which are glaucous beneath, while a more southern lowland form differs from it in having relatively unbranched rootstocks and green leaves. The former he identifies with *D. glauca* of Muhlenberg's Catalogue and the latter with *D. quaternata* (Walt.) Gmel. The distribution-map which accompanies the description of the latter species shows it to be a plant, not of the lowlands, but of the foothills, which belong to the Alleghanian floral region. Study of specimens from all parts of this region fail to show any great differences in leaf surface. The writer has not had opportunity to examine many rootstocks, but the fruits and seeds were alike in all specimens which had them. It seems better to adopt the conservative treatment of all these Alleghanian plants as one species, the name of which is *D. quaternata.*

Walter[1] described two species with verticillate leaves, *Anonymos* (Dioscoreae affinis ?) *quaternat.*, and *Anonymos* (Dioscoreae affinis ?) *quinat.* The latter has frequently been cited as a synonym of *D. villosa.* It is probably the same as *D. quaternata* which usually has more than four leaves in a whorl.

Blake has shown that the Linnean species *D. villosa* need not be rejected, as there is a specimen in the Clayton herbarium which fixes its identity.[2]

The two well-marked species of *Dioscorea* which appear in our manuals under *D. villosa* may be separated as follows:

DIOSCOREA QUATERNATA (Walt.) Gmel. Syst. 581 (1796). *Anonymos quaternat.* Walt. Fl. Car. 246 (1788). *D. glauca* Muhl. Cat. 92 (1813) as defined by Bartlett l. c. 13 (1910). *D. villosa,* var. *glabra* C. G. Lloyd, in King & Lloyd, Suppl. Am. Dispens. 81 (1880). Rootstock thick and much branched; stem twining, glabrous; lower leaves verticillate, the upper in pairs or alternate, blades of the larger ones often 10 cm. long, petiole often villous at the junction with the blade, blade more or less puberulent beneath, or glabrous, glaucous on lower surface, usually repand; inflorescences one in the axil of each leaf; ripe capsules 20–30 mm. long; seeds, exclusive of wing, 5–6.5 mm. broad.—Pennsylvania to western Florida, Missouri, Arkansas and Oklahoma. It has been found in all parts of Tennessee. The following is a representative, but not a complete list of stations. Woods, rocky ridge, Cades Cove, June 15, 1928, *Anderson & Jennison;* White Cliff Springs, Monroe County, June 29, 1890, *Scribner;* along Clinch River between Tate and Tazewell, May 12, 1929, *Hesler & Jennison;* Knoxville, *Scribner,* no. 7345; ledges, Lookout Mountain, Chattanooga, May 22, 1911, *Churchill;* sandy woods along creek, Daysville, *Jennison, Hesler & Anderson,* no. 1408; Cowan, July 14, 1867, *Gattinger;* Kingston Springs, *Svenson,* no. 280; Haywood County, June 6, 1893, *Bain.*

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[1] Walter, Flor. Carolin., 246 (1788).

[2] Blake, S. F., Notes on the Clayton Herbarium, RHODORA xx. 48 (1918).

Dioscorea villosa L. Sp. Pl. ii. 1033 (1753). *D. paniculata* Michx. Fl. Bor.-Am. ii. 239 (1803). Rootstock little branched (Bartlett); stem twining; none of the leaves verticillate, blades rarely more than 8 cm. long, densely pubescent on lower surface, petiole glabrous; inflorescence a small panicle or raceme, one in the axil of each leaf; ripe capsule 15–20 mm. long; seeds, exclusive of wing, 3–4.5 (usually 4) mm. broad.—Connecticut to New Jersey, west to Minnesota and Oklahoma.

Var. *glabrifolia* (Bartlett) Stone, Pl. So. N. J. 358 (1912) (*D. paniculata,* var. *glabrifolia* Bartlett, l. c. 15 (1910)), has glabrous leaves, otherwise as in the species. One specimen from Haywood County, Tennessee, *Bain,* no. 321, is cited by Bartlett. This specimen has no capsules or lower leaves by which it can be positively identified. It bears the same data as a specimen of *D. quaternata* from the same region, and the same number as one of *D. quaternata* collected the year before. It is probable that this is a fragmentary duplicate of one of these specimens, and that *D. villosa* has not been collected in Tennessee.

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SOME INADEQUATELY CHARACTERIZED SPECIES OF GEORGE VASEY

M. L. Fernald and C. A. Weatherby

In 1907, the late Theodor Holm clearly described a new grass as *Glyceria paupercula* Holm in Fedde, Repert. iii. 337 (1907), stating, correctly, that "It is a member of the section *Atropis* Rupr." A definite type was cited and afterward an exquisite heliotype plate of it with the diagnostic details was published: Geol. Surv. Can. Pl. x. Everything essential to ideal diagnosis and publication of a new species was there, except the actual date of issue of the plate, a matter beyond the control of its author.[1] Consequently, viewing *Glyceria* § *Atropis* as constituting a genus, *Puccinellia,* we transferred Holm's species to it, making the combination *Puccinellia paupercula* (Holm) Fernald & Weatherby, Rhodora, xviii. 18 (1916). Typical *P. paupercula* is essentially eastern, but a larger and wide-spread variety, var. *alaskana* (Scribn. & Merr.) Fern. & Weath., l. c., based on *P. alaskana* Scribn. & Merr. Contr. U. S. Nat. Herb. xiii. 78 (1910), abounds on Vancouver Island.

It now seems that in 1888 George Vasey got hold of something of the sort. In a running account of a number of new grasses he wrote[2] without any paragraphing of the separate entities, without any differentiation of them as new, and for the most part without any statement of really diagnostic characters, a rambling summary of them, thus:

> A considerable number of other new or interesting forms have been received . . . and I wish here briefly to give a short account of them. Mr. J. Macoun botanized in Vancouver Island the past season . . . he sends the following: *Deyeuxia Vancouverensis*, a small species, 10 or 12 inches high, with spicate panicle 1½ to 2 inches long, approaching *D. strigosa,* Kth.; . . . *Deschampsia caespitosa,* variety *maritima,* 6 to 8 inches high, growing on the seashore; . . . *Glyceria pumila,* about 4 inches high, panicle small, mostly of three to five approximate sessile spikelets with a lower branch ½ to 1 inch long; *Bromus Macounii,* closely resembling *B. erectus,* Huds., but with a smaller, purplish panicle. . . . .
>
> Mr. G. C. Nealley . . . has discovered several new species, among which are *Triodia Nealleyi,* of similar aspect to *T. avenacea,* and another *Triodia* of which, unfortunately, too little for full characterization was collected and which may be called *T. repens;* . . . *Sporobolus Nealleyi,* a dwarf, erect species, with small, open panicle; etc., etc.

Naturally, such names are published *as names* but they are not accompanied by any characters which are *specifically* diagnostic; at best the brief and inconsequential phrases accompanying them merely describe habit and not the details of glumes, lemma, palea, ligule or other parts which Dr. Vasey knew to be fundamental in separating species of grasses. It is most likely that he was merely publishing what nowadays would be called a preliminary announcement, intending later to give proper diagnoses; as some of his other work shows he regularly prepared diagnoses in his more serious papers. Such entities as Vasey had, if they can be found, for he cited no actual types or specimens, may be identifiable; but it seems to us a very doubtful and needlessly disturbing policy to take up their names to displace those of species which had been carefully characterized and accurately illustrated. Nevertheless, we now have an effort made to displace the beautifully definite *Puccinellia paupercula* by the woefully indefinite *P. pumila* (Vasey) Hitchc. Am. Journ. Bot. xxi. 129 (1934). Vasey's original description of the habit, "about 4 inches high, panicle small," etc. has already been fully quoted. There are many species which may be "about 4 inches high" and with "panicle small." Vasey gave not a single word about the size of the anther and the grain nor the characters of glume, lemma and palea, all of which are highly important in *Puccinellia.* Furthermore, he did not even give a clue and presumably did not know that it was a *Puccinellia;* to him it was simply another *Glyceria.* Taxonomy has reached a low ebb when such inadequately defined names can be taken up to displace those which had perfect definition. Quite aside from the unimportant question of the authorship of *Puccinellia paupercula,* we feel that the important cause of sound and convincing nomenclature would be seriously set back by accepting such names of Vasey (and others) as those above noted. At best they are *nomina subnuda.*

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[1] For data regarding this series of plates see Rhodora, xxx. 151 (1928).

[2] Bull. Torr. Bot. Cl. xv. 48, 49 (1888).

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